

## Union Calendar No. 432

111TH CONGRESS }  
*2d Session*

HOUSE OF REPRESENTATIVES

{ REPORT  
111-709

### FINAL STAFF REPORT FOR THE 111TH CONGRESS

SUBMITTED BY MR. MARKEY, CHAIRMAN,  
SELECT COMMITTEE ON ENERGY  
INDEPENDENCE  
AND GLOBAL WARMING



JANUARY 3, 2011.—Committed to the Committee of the Whole House on  
the State of the Union and ordered to be printed

**SELECT COMMITTEE ON ENERGY INDEPENDENCE AND GLOBAL WARMING'S  
FINAL STAFF REPORT FOR THE 117TH CONGRESS**

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SELECT COMMITTEE ON ENERGY INDEPENDENCE AND  
GLOBAL WARMING, HOUSE OF REPRESENTATIVES,  
*Washington, DC, January 3, 2011.*

Hon. NANCY PELOSI,  
*Speaker, House of Representatives,*  
*Washington, DC.*

DEAR MADAM SPEAKER: Pursuant to H. Res. 5, section 4(a)(5), I hereby transmit to you the Select Committee on Energy Independence and Global Warming's Final Staff Report for the 111th Congress. This report summarizes the Select Committee's work during this Congress, the historic achievements on energy and climate issues, and recommendations for actions in the 112th Congress.

As we move into the 112th Congress, I want to thank you for your historic and continued leadership and vision on the critical issues of energy security and climate change. I hope and trust that the work of the Select Committee, reflected in this Report, will assist the next Congress as we press forward to meet these urgent challenges and opportunities.

EDWARD J. MARKEY,  
*Chairman.*



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Mr. MARKEY, from the Select Committee on Energy Independence and Global Warming, submitted the following

## R E P O R T

### INTRODUCTION

We are at a watershed moment in the history of energy production—and the choices we make at this juncture will determine the fate of our planet and the national security and economic future of the United States. Between now and 2030, roughly \$26 trillion will be invested in energy infrastructure worldwide. Clean energy will likely make up an increasing share of this investment with every passing year. The International Energy Agency (IEA) estimates that \$5.7 trillion will be invested in renewable electricity generation alone between 2010 and 2035.<sup>1</sup> This new infrastructure is long-lived and costly, and the decisions made in the next decade will set the course of the global and U.S. energy system—and of the global climate—for the next century and beyond. This transition also presents an unprecedented opportunity for economic growth and job creation in the clean energy technology sector. Other countries are taking the lead in clean energy and the United States must act now if it is to remain competitive in this rapidly developing global market.

Global climate change presents one of the gravest threats to our planet's health, and to America's economy, its national security, and its public health. Scientists warn that we may be approaching a tipping point, after which it will become increasingly difficult, or perhaps impossible, to halt global warming and its catastrophic effects. The United States confronts this issue at the same time it faces a deepening energy crisis—characterized by skyrocketing

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<sup>1</sup>International Energy Agency, World Energy Outlook 2010. Available at <http://www.worldenergyoutlook.org/>.

prices, high dependence on foreign oil, and continued reliance on high-carbon fuels that worsen the climate crisis.

The Select Committee on Energy Independence and Global Warming was created by Speaker of the House Nancy Pelosi in 2007 to examine and make recommendations on the interrelated issues of energy independence, national security, America's economic future and global warming.

During its four years, the Select Committee held 80 hearings and briefings, conducted investigations, led fact finding trips with Congressional members, and contributed to the most active four years in energy and climate policy development and debate in the United States Congress.

As a result of the Select Committee's work in raising the profile of energy and climate issues, and spurring increased debate, the House of Representatives passed several pieces of legislation that will reduce our nation's consumption of foreign oil, increase energy efficiency, and create new jobs in the clean energy sector.

In 2007, the first year of the Select Committee, the House passed the Energy Independence and Security Act, which included fuel economy provisions co-authored by Rep. Edward J. Markey, Chairman of the Select Committee. The bill also increased America's use of advanced biofuels, and updated energy efficiency standards for appliances and lighting systems.

The Select Committee also was instrumental in pushing for increased investment in clean energy technologies. The American Recovery and Reinvestment Act of 2009 invested \$90 billion in clean energy, which jump-started new domestic industries like advanced electric batteries, boosted household energy efficiency, and helped key renewable energy sectors like wind and solar avoid collapse during the recession.

In June of 2009, the House passed the Waxman-Markey American Clean Energy and Security Act, the first passage of a comprehensive energy and climate bill in the history of the U.S. Congress. The bill set ambitious carbon reduction targets, which were used by U.S. negotiators to craft the Copenhagen Accord. It also created a roadmap to create clean energy jobs and the next generation of clean energy technologies.

These legislative achievements happened as historic events indicated that swift action was needed to address a strained energy system and a dangerously destabilized climate. The years 2007–2010 are all in the top ten warmest years on record, according to NASA. Oil and gasoline prices peaked to record levels in 2007 and are on the rise again as the country emerges from the recession.

As the Select Committee ends its tenure of progress, it is clear that there is much left to be done to stabilize our global climate, and spur the development of clean energy technology and jobs here in America.

This report summarizes the results and findings of the Select Committee's hearings and investigations, highlights legislative accomplishments that flow from the information it has developed and makes recommendations for steps moving forward. We begin with a discussion of the key issue of energy independence.

## I. ENERGY INDEPENDENCE

## INTRODUCTION

The United States is confronting a deepening energy security crisis—characterized by escalating and volatile energy prices, unacceptably high dependence on foreign oil, and increasing global demand for limited energy resources. At the same time, an unprecedented economic and job creation opportunity has developed in the clean energy sector. According to the IEA, roughly \$26 trillion in investment will be needed through 2030 to meet the world's energy demand, a significant share of which will be made in the rapidly growing clean energy sector.<sup>2</sup> Nations that move aggressively now will position their domestic companies and workers to disproportionately benefit in this key growth sector.

*The Oil Challenge*

The United States' continuing addiction to oil presents a serious threat to our national security and economy. The United States is the largest consumer of oil in the world, accounting for 22 percent of global demand—principally to power our transportation system, which is 95 percent dependent on oil.<sup>3</sup> About half of all U.S. oil consumption in 2010—3.5 billion barrels—came from foreign sources. Imports have declined from their peak of 60 percent of total consumption in 2005 but are still up from 42 percent in 1990 and 27 percent in 1985.<sup>4</sup>

Oil and gasoline prices have been on a roller coaster ride over the past four years, and are predicted to remain at historically high levels for the foreseeable future, primarily as a result of rising global demand. Crude oil prices have increased by 250 percent over the last decade while gasoline prices have more than doubled.<sup>5</sup> In just the last 3 years, the price of a barrel of oil has soared to \$147, dropped to \$36, and climbed back above \$90 by the close of 2010.<sup>6</sup>

Experts agree that rapidly growing oil demand from developing countries is likely to result in sustained high prices for the foreseeable future. China, for example, alone is expected to grow its vehicle fleet from 40 million vehicles today to 350 million by 2035, according to the International Energy Agency (IEA).

Soaring petroleum prices have been a drain on the economy and have a crippling effect on American consumers. Nearly \$1.3 trillion has been sent overseas to import oil over the past four years, while oil imports have grown to account for nearly half the U.S. trade deficit.<sup>7</sup> Each \$1 per gallon increase in the average cost of gasoline adds nearly \$600 to an average American's annual transportation

<sup>2</sup>International Energy Agency, *World Energy Outlook 2008*. Available at <http://www.iea.org/textbase/nppdf/free/2008/weo2008.pdf>.

<sup>3</sup>Energy Information Administration; *World Oil Balance: Second Quarter 2010 and U.S. Consumption by Sector*. Available at [http://www.eia.doe.gov/pub/oil\\_gas/petroleum/analysis\\_publications/oil\\_market\\_basics/demand\\_text.htm#Global Oil Consumption](http://www.eia.doe.gov/pub/oil_gas/petroleum/analysis_publications/oil_market_basics/demand_text.htm#Global%20Oil%20Consumption).

<sup>4</sup>Energy Information Administration, *Monthly Energy Review* November 2010, Table 3.3a Petroleum Trade: Overview. Available at: [http://www.eia.doe.gov/mer/pdf/pages/sec3\\_7.pdf](http://www.eia.doe.gov/mer/pdf/pages/sec3_7.pdf).

<sup>5</sup>Energy Information Administration *Weekly United States Spot Price FOB Weighted by Estimated Import Volume (Dollars per Barrel)* (November 2010) Available at [http://www.eia.gov/dnav/pet/pet\\_pri\\_wco\\_k\\_w.htm](http://www.eia.gov/dnav/pet/pet_pri_wco_k_w.htm).

<sup>6</sup>Id.

<sup>7</sup>As calculated by Select Committee staff, from census data. See U.S. Census Bureau Foreign Trade, Exhibit 9—Petroleum and Non-petroleum End-Use Category Totals (Sept 2010) Available at <http://www.census.gov/foreign-trade/Press-Release/2010pr/10/exh9.pdf>.

fuel bill.<sup>8</sup> At mid-2008 gasoline prices, fuel expenses were eating up nearly 10 percent of an average American worker's pre-tax income.<sup>9</sup>

In addition, nearly 8 million American households rely on heating oil to warm their homes during the winter. These households face an expected average heating bill of \$2,146 during the 2010–11 winter, 61 percent more than households spent on average 6 winters ago.<sup>10</sup>

OPEC countries control 70 percent of estimated global oil reserves and account for 40 percent of global production.<sup>11</sup> OPEC's share of global production is projected to continue to increase, reaching more than 50 percent by 2035.<sup>12</sup> Moreover, investor-owned companies control only about 6 percent of the world's known oil reserves. By contrast, government-owned and operated companies in oil-producing countries, such as Saudi Aramco in Saudi Arabia or the National Iranian Oil Company in Iran, control most of the rest.<sup>13</sup> Of the top 20 oil producing companies in the world, 14 are national oil companies (NOCs) or newly privatized NOCs.<sup>14</sup> Although Canada and Mexico supply a substantial proportion of U.S. imports, OPEC countries control virtually all of the world's marginal production capacity and therefore have the ability to set the global price for this commodity. As a result, the United States' national security and economy is increasingly threatened by the potential for a supply disruption or market manipulation by sometimes unfriendly foreign governments.

Despite increasing calls to open the Outer Continental Shelf (OCS) and the Arctic National Wildlife Refuge (ANWR) to drilling, the facts make clear that we cannot drill our way out of this problem. While the United States consumes 22 percent of the world's oil, it has less than 3 percent of global reserves. More drilling will have little or no impact on prices consumers pay for gasoline and will not substantially reduce U.S. dependence on foreign oil.

The Department of Energy's Energy Information Administration (EIA) estimates that, even if the entire lower 48 OCS were opened to drilling, this would increase cumulative U.S. oil production by only 1.6 percent by 2030 and would have an "insignificant" impact

<sup>8</sup>This is based on EPA estimates of fuel economy and miles driven by an average U.S. passenger vehicle. See Environmental Protection Agency, Emission Facts: Greenhouse Gas Emissions from a Typical Passenger Vehicle, Fact Sheet EPA420-F-05-004 (Feb. 2005) Available at <http://www.epa.gov/oms/climate/420f05004.htm>.

<sup>9</sup>According to the Department of Transportation, U.S. cars, vans, pickups, and SUVs in 2005 traveled an average of 11,856 miles and used 594 gallons of gasoline over the course of the year. U.S. Department of Transportation, Federal Highway Administration, Annual Vehicle Distance Traveled in Kilometers and Related Data—2005, By Highway Category and Vehicle Type (Table VM-1M) (Nov. 2006) Available at <http://www.fhwa.dot.gov/policy/ohim/hs05/pdf/vm1m.pdf>. Based on those figures, with gasoline prices at \$3.75 per gallon, the average consumer would spend \$2,227.50.

<sup>10</sup>Energy Information Administration, Short-Term Energy Outlook, December 2010—Table WF01. Available at <http://www.eia.gov/emeu/steo/pub/wf-table.pdf>.

<sup>11</sup>Energy Information Administration, International Petroleum Monthly (November 2010) Available at <http://www.eia.doe.gov/ipm/supply.html>; and Oil and Gas Journal—World Proved Reserves of Oil and Natural Gas, Most Recent Estimates, (March 2, 2009) Available at <http://www.eia.doe.gov/emeu/international/reserves.html>.

<sup>12</sup>International Energy Agency, World Energy Outlook 2010 at 48 (2010).

<sup>13</sup>David Baker, "Big Oil has trouble finding new fields," San Francisco Chronicle, Feb. 1, 2008. Available at <http://www.sfgate.com/cgi-bin/article.cgi?f=/c/a/2008/02/01/BUMDUOD7S.DTL>.

<sup>14</sup>Amy Myers Jaffe & Ronald Soligo, The International Oil Companies at 3 (Nov. 2007) (The James A. Baker III Institute for Public Policy) Available at [http://www.bakerinstitute.org/publications/NOC\\_IOCs\\_Jaffe-Soligo.pdf](http://www.bakerinstitute.org/publications/NOC_IOCs_Jaffe-Soligo.pdf).



on prices.<sup>15</sup> As to the Arctic National Wildlife Refuge, EIA estimates that if the Refuge were opened for drilling, production would likely peak in 2027 at just 0.78 million barrels per day—reducing world oil prices by 78 cents per barrel in EIA’s average price and resource case.<sup>16</sup> EIA notes that “the Organization of Petroleum Exporting Countries (OPEC) could neutralize any potential price impact of ANWR oil production by reducing its oil exports by an equal amount.”<sup>17</sup>

In addition, there is currently no shortage of opportunities for drilling on federal lands in the United States. Oil and gas companies currently hold leases to nearly 68 million acres of federal lands and offshore areas on which they are not currently producing.<sup>18</sup> From 2000 through 2009, the federal government has offered more than 517 million acres for lease offshore and leased more than 8,700 tracts.<sup>19</sup> Onshore, more than 40,000 permits have been approved for drilling. Nearly 83 percent of technically recoverable offshore oil reserves offshore in the United States are located in areas already available for leasing and drilling.<sup>20</sup>

Finally, regardless of U.S. oil production trends, there are serious questions about how increasing global demand will be met—and whether it can be met at all. Estimates of the total petroleum resources currently in the ground—both conventional and unconventional<sup>21</sup>—vary from 14 to 24 trillion barrels.<sup>22</sup> However, actual “proven reserves” that have already been discovered and are expected to be economically producible are much lower—estimated at between 1.2 and 1.3 trillion barrels worldwide. Chevron Corporation has estimated that humanity has consumed 1 trillion barrels of oil during the past 125 years, but that it will take just 30 years to burn through another trillion barrels. Proven U.S. reserves are estimated at 21 billion to 30 billion barrels, enough to meet U.S. demand for 3 or 4 years.<sup>23</sup>

Generating new oil supply is proving increasingly difficult. The fields that oil companies find are generally in hard-to-reach places like deep water areas in the Gulf of Mexico, where drilling and pumping costs far more than it does on land. Much of these companies’ current oil supplies come from old giant fields which are now

<sup>15</sup> Energy Information Administration, Impacts of Increased Access to Oil and Natural Gas Resources in the Lower 48 Federal Outer Continental Shelf. Available at <http://www.eia.doe.gov/oiaf/aeo/otheranalysis/ongr.html>.

<sup>16</sup> Energy Information Administration, Analysis of Crude Oil Production in the Arctic National Wildlife Refuge (May 2008). Available at <http://www.eia.doe.gov/oiaf/servicerpt/anwr/index.html>.

<sup>17</sup> *Id.*, p. 11.

<sup>18</sup> Department of Interior, Minerals Management Service, All Reported Royalty Revenues, Fiscal Year 2004. Available at <http://www.mrm.mms.gov/MRMWebStats/DisbursementsRoyalties.aspx?report=TotalLeasesbyCategory&yeartype=FY&year=2007&asOfDate=10-26-2007>.

<sup>19</sup> Department of Interior, Mineral Management Service, Table 1. All Lease Offerings. Available at [http://www.gomr.boemre.gov/homepg/lseale/swiler/Table\\_1.PDF](http://www.gomr.boemre.gov/homepg/lseale/swiler/Table_1.PDF).

<sup>20</sup> Department of Interior, Mineral Management Service, Report to Congress: Comprehensive Inventory of U.S. OCS Oil and Natural Gas Resources (Feb. 2006). Available at <http://www.mms.gov/revaldiv/PDFs/FinalInvRptToCongress050106.pdf>. Figures are adjusted to account for the estimated 1.26 billion barrels of oil and 79.96 trillion cubic feet of gas in the Gulf of Mexico that were made accessible following this inventory by the Gulf of Mexico Energy Security Act of 2006.

<sup>21</sup> Conventional oil is crude oil and natural gas liquids produced from underground reservoirs by means of conventional wells. Non-conventional oil includes oil shales, oil sands, and extra-heavy crude.

<sup>22</sup> Energy Information Administration, Long-term Global Oil Scenarios: Looking Beyond 2030 (Slide presentation by Glen Sweetnam from EIA 2008 Energy Conference, April 7, 2008) (EIA uses 20.6 trillion barrels as its base case.).

<sup>23</sup> Energy Information Administration, World Proved Reserves of Oil and Natural Gas, Most Recent Estimates, Oil and Gas Journal, (March 3, 2009) Available at <http://www.eia.doe.gov/emeu/international/reserves.html>.

in decline and deepwater fields which may have shorter lifespans than traditional fields.<sup>24</sup> The 87 day BP Deepwater Horizon oil and gas spill illustrates the inherent risk and increased environmental and safety challenges of pursuing ever more remote, highly pressurized, and difficult to extract hydrocarbon deposits.

Further, a growing share of reserve additions are coming from revised appraisals of existing fields, not the discovery of new fields. Even with advances in technology, the average size of discoveries per exploratory well is around 10 million barrels, which is half the output of wells dug between 1965 and 1979.<sup>25</sup> As a result, the IEA believes that crude oil output will not exceed the all-time peak production level of 70 million barrels per day (mb/d) reached in 2006. Instead, crude output plateaus around 68–69 mb/d over the next decade, while production of natural gas liquids and unconventional oil grows.<sup>26</sup>

In short, the shrinking margin between stagnant supply and soaring demand provides yet another reason that the United States and the world need to begin to look beyond oil to meet our growing energy needs.

## PART II: THE ELECTRICITY CHALLENGE

Even with the recession reducing economic growth and electricity demand in 2008 and 2009, the U.S. power sector is facing rapid and sustained growth in demand over the coming decades. Additionally, our electricity transmission and distribution infrastructure is outdated and overtaxed, and uncertainty about climate regulation is stalling new investment.

U.S. electricity demand is predicted to increase by 30 percent by 2035, requiring the construction of 250,000 megawatts of new generating capacity—or equivalent increases in efficiency.<sup>27</sup> Many regions of the country are predicted to see declining levels of reserve capacity—putting the reliability of the grid at greater risk.

More than 10,000 megawatts of new wind generating capacity was installed in the United States in 2009,<sup>28</sup> making it the second consecutive year in which more wind capacity was installed than natural gas, coal, or any other resource.<sup>29</sup> While coal remains the single largest source of electricity in the country (45 percent), fuel-switching to natural gas contributed to a 12 percent decline in coal-fired generation in 2009, its lowest share of the electricity market since 1978. Longer-term, the massive contribution of coal-fired power plants to global warming pollution and uncertainty regarding climate policy are making it increasingly inadvisable and difficult to build new conventional coal-fired plants.

Beginning January 1, 2011, EPA will phase in permitting requirements for new plants with greenhouse gas emissions. Power

<sup>24</sup> Matthew R. Simmons, Simmons & Company International, *The 21st Century Energy Crisis Has Arrived* (Presentation to the CFA Society of Atlanta: April 16, 2008).

<sup>25</sup> International Energy Agency, *World Energy Outlook 2006* at 90.

<sup>26</sup> International Energy Agency, *World Energy Outlook 2010* at 48.

<sup>27</sup> Energy Information Administration, *Annual Energy Outlook 2010*. Available at <http://www.eia.doe.gov/oiaf/archive/aeo10/electricity.html>.

<sup>28</sup> American Wind Energy Association, *U.S. Wind Industry Annual Market Report, Year Ending 2009* Available at [http://e360.yale.edu/images/digest/Annual\\_Market\\_Report\\_Wind.pdf](http://e360.yale.edu/images/digest/Annual_Market_Report_Wind.pdf).

<sup>29</sup> Energy Information Administration, *Electric Power Annual 2008* Available at <ftp://ftp.eia.doe.gov/electricity/034808.pdf>; and Energy Information Administration, *Electric Power Annual 2009*, See table 1.5 *Capacity Additions, Retirements and Changes by Energy Source, 2009* at 19. Available at [http://www.eia.doe.gov/cneaf/electricity/epa/epaxfile1\\_5.pdf](http://www.eia.doe.gov/cneaf/electricity/epa/epaxfile1_5.pdf).

plants will also face new air toxics regulations in the next several years. Meanwhile, discoveries of domestic shale gas deposits and advances in horizontal drilling and hydraulic fracturing techniques, have led to expanded domestic gas reserves and production and the lowest well-head prices<sup>30</sup> in seven years. U.S. solar electric capacity grew 37 percent in 2009<sup>31</sup> as the price of photovoltaic modules has declined 50 percent in price over the last two years. While many advocate nuclear power, massive expansion would be necessary even for it to maintain its current share of U.S. generation, and there are very substantial financial, market, and other obstacles to such an expansion.

Rapidly growing demand, security challenges, and underinvestment in transmission infrastructure have created concerns about the reliability of the electrical grid. A number of steps have been taken to increase grid reliability in the wake of the 2003 blackouts in the northeast. However, transmission congestion remains a problem and the margin between capacity and demand is growing thinner in many regions of the country—notably the Midwest, Southwest, and California—creating concerns about the potential for brownouts or blackouts in the next several years.<sup>32</sup> The grid’s increasing reliance on automation and two-way communications, especially with the rise of advanced metering and other “smart grid” capabilities, has increased the grid’s vulnerability to remote cyber attacks.

Retail electricity prices have seen a steady upward march over the last decade due to rising fuel and infrastructure costs. Prices have increased from a nationwide average of 6.64 cents per kilowatt hour in 1999 to 9.89 cents in 2009, a 49 percent rise.<sup>33</sup> However, electricity represents a much less price volatile form of energy, as average annual electricity rates are projected by the EIA to stay relatively steady, increasing to 10.2 cents per kilowatt hour in real dollars through 2035.

Electricity generation is heavily dependent on water, and growing water scarcity due to climate change will constrain power generation in many areas here in the United States and abroad. Power plants that convert thermal energy into electricity—primarily coal, natural gas, oil, and nuclear power plants—currently produce 90 percent of U.S. electricity and consume massive amounts of the country’s fresh water supply for steam generation and cooling.

Hydroelectric power, which typically accounts for another 6–9 percent of U.S. power generation, is of course highly dependent on water flow. Water used by electric utilities accounts for 20 percent of all non-farm water use in the United States.<sup>34</sup> This figure could rise to 60 percent by 2030, with fast-growing regions like the Southwest and Southeast hit the hardest. In recent years, decreased river flow and increased water temperatures already have

<sup>30</sup> The well-head price is the price charged by the producer for petroleum or natural gas without transportation costs.

<sup>31</sup> Solar Energy Industry Association, U.S. Solar Industry Year in Review 2009 (April 15, 2010), Available at <http://seia.org/galleries/default-file/2009%20Solar%20Industry%20Year%20in%20Review.pdf>.

<sup>32</sup> See generally North American Electric Reliability Corporation, 2007 Long-term Reliability Assessment (Oct. 2007).

<sup>33</sup> Energy Information Administration, Average Retail Price of Electricity to Ultimate Customers: Total by End-Use Sector. Available at: [http://www.eia.doe.gov/cneaf/electricity/epm/table5\\_3.html](http://www.eia.doe.gov/cneaf/electricity/epm/table5_3.html).

<sup>34</sup> Peter Spotts, “Trade-off looms for arid US regions: water or power?” *The Christian Science Monitor*, April 17, 2007.

led to shut-downs of nuclear power plants in the southeastern United States and across Europe. These problems will be exacerbated as global warming increases temperatures and water scarcity.

### *Coal*

Coal has not been immune to the increase in fossil fuel costs, as domestic prices have soared nearly 60 percent between 2000 and 2009.<sup>35</sup> These higher prices drove a decline in coal-fired generation to its lowest share of the domestic electricity market since 1978.

Yet coal remains a key fuel for the electric power sector, both for the United States and the rest of the world. Often referred to as the Saudi Arabia of coal, the United States has the largest coal reserves in the world (28 percent of global reserves<sup>36</sup>) and produces more than 10 billion short tons of coal annually. More than 90 percent of U.S. coal consumption is used for electricity generation. It is frequently asserted that U.S. reserves are sufficient to last 250 years at current rates of consumption, though a 2007 National Research Council report emphasized that this estimate could not be confirmed and some question whether full recovery is feasible.<sup>37</sup> China and India, two of the largest, fastest growing economies in the world, have large reserves and rely on coal for most of their electricity generation (80 percent for China and 71 percent for India).<sup>38</sup>

Coal presents a serious challenge from the perspective of global warming, and the successful development of carbon capture and sequestration (CCS) technologies will be crucial to reconciling our continued reliance on coal with the urgent need to reduce greenhouse gas emissions. Because of coal's high-carbon content, coal-fired power plants emit roughly twice as much carbon dioxide per unit of electricity as natural gas-fired plants. Existing coal-fired plants account for about a third of U.S. CO<sub>2</sub> emissions, and projected business-as-usual expansion in conventional coal-fired power plants would make achieving science-based reductions of carbon emissions impossible. Globally, coal-fired generation is expected to nearly double between 2007 and 2035, with the lion's share of new capacity being built in China and India.<sup>39</sup> If built without carbon controls, these new coal plants alone would increase global greenhouse gas emissions by nearly 19 percent above current levels.<sup>40</sup>

Here in the United States, construction of new coal-fired power plants has slowed. According to one tally, more than 100 coal-fired power plants were cancelled, abandoned, or put on hold between 2007 and 2009.<sup>41</sup> While 2009 saw more new coal capacity come online in the United States in a single year since 1991, it was far less

<sup>35</sup> Energy Information Administration, Annual Energy Review 2009, Table 7.8 Coal Prices, Selected Years, 1949–2009. Available at [http://www.eia.gov/emeu/aer/pdf/pages/sec7\\_19.pdf](http://www.eia.gov/emeu/aer/pdf/pages/sec7_19.pdf).

<sup>36</sup> Energy Information Administration, International Energy Statistics, Total Recoverable Coal. Available at <http://tonto.eia.doe.gov/cfapps/ipdbproject/IEDIndex3.cfm?tid=1&pid=7&aid=6>.

<sup>37</sup> National Research Council, Coal: Research and Development to Support National Energy Policy (2007).

<sup>38</sup> Energy Information Administration, International Energy Outlook 2010, at 87. Available at <http://www.eia.doe.gov/oiaf/ieo/pdf/electricity.pdf>.

<sup>39</sup> Energy Information Administration, International Energy Outlook 2010. Available at <http://www.eia.doe.gov/oiaf/ieo/pdf/electricity.pdf>.

<sup>40</sup> As calculated by Select Committee Staff. See Energy Information Administration, International Energy Outlook 2010, Available at <http://www.eia.doe.gov/oiaf/ieo/pdf/electricity.pdf>.

<sup>41</sup> Source Watch “Coal plants cancelled in 2009,” available at [http://www.sourcewatch.org/index.php?title=Coal\\_plants\\_cancelled\\_in\\_2009](http://www.sourcewatch.org/index.php?title=Coal_plants_cancelled_in_2009).

than new wind (9,410 MW) and natural gas (9,403 MW) capacity added that year.<sup>42</sup> In fact, more than four times as much planned coal capacity was cancelled or abandoned (14,900 MW) as was completed (3,200 MW) in 2009.<sup>43</sup> This slowdown was due in large part to public and regulatory opposition related coal plants' emissions of CO<sub>2</sub> as well as conventional pollutants, such as mercury. This opposition, together with uncertainty about future climate regulation, is making it increasingly difficult for new coal-fired power plants to secure financing. For example, in February 2008, three of what were then Wall Street's biggest investment banks issued standards requiring utilities seeking financing for coal-fired power plants to demonstrate that the plants will be economically viable even with stringent federal controls on CO<sub>2</sub> emissions.<sup>44</sup>

### *Natural Gas*

Two qualities make natural gas an important bridge fuel in the U.S. energy system: it emits roughly half the carbon as coal in producing the same amount of energy, and it is found and produced in the United States. Although the United States consumes 23 percent of the world's natural gas and has less than 4 percent of global reserves<sup>45</sup>—ultimately an unsustainable equation—natural gas does not present the same immediate geopolitical and economic security risks as oil. Net natural gas imports currently make up just 12 percent of total supply, the vast majority of which comes from Canada. Further, EIA projects imports to fall to 6 percent of U.S. supply in 2035.<sup>46</sup> After four consecutive years of production increases, the United States is now producing more natural gas than it ever has before. It has become a fuel of choice for new power plants in the United States because of its low emissions, comparatively low capital cost, short lead times for plant construction, and relatively low current fuel prices. The electric power sector now accounts for 30 percent of total U.S. natural gas consumption, nearly the same as the manufacturing sector.<sup>47</sup>

New drilling technologies, especially horizontal drilling and hydraulic fracturing, have driven the recent surge in domestic production by allowing the extraction of shale gas from geologic formations that could not be tapped with traditional techniques. The resource potential of shale gas has significantly increased the natural gas reserve estimates in the United States.<sup>48</sup> The Potential Gas Committee estimated in 2009 that the United States held 35 percent more gas reserves than it believed two years earlier, an 80-

<sup>42</sup>Energy Information Administration, Electric Power Annual 2009, Table 1.5. Capacity Additions, Retirements and Changes by Energy Source (2009). Available at [http://www.eia.doe.gov/cneaf/electricity/epa/epaxfile1\\_5.pdf](http://www.eia.doe.gov/cneaf/electricity/epa/epaxfile1_5.pdf).

<sup>43</sup>National Energy Technology Laboratories, Tracking New Coal-Fired Power Plants, January 8, 2010. Available at <http://www.netl.doe.gov/coal/refshelf/ncp.pdf>.

<sup>44</sup>See, e.g., Jeffrey Ball, "Wall Street Shows Skepticism Over Coal: Banks Push Utilities To Plan for Impact of Emissions Caps," Wall Street Journal, Feb. 4, 2008, at A6.

<sup>45</sup>Energy Information Administration, World Proved Reserves of Oil and Natural Gas, Most Recent Estimates (March 3, 2009), Oil and Gas Journal data. Available at <http://www.eia.doe.gov/emeu/international/reserves.html>.

<sup>46</sup>Energy Information Administration, Annual Energy Outlook 2010 with Projections to 2035, May 11, 2010. Available at <http://www.eia.doe.gov/oiaf/aeo/gas.html>.

<sup>47</sup>Energy Information Administration, Natural Gas Consumption by End Use (November 2010). Available at [http://tonto.eia.doe.gov/dnav/ng/ng\\_cons\\_sum\\_dcunus\\_m.htm](http://tonto.eia.doe.gov/dnav/ng/ng_cons_sum_dcunus_m.htm).

<sup>48</sup>Energy Information Administration, Annual Energy Outlook 2010 with Projections to 2035, May 11, 2010, at 1. Available at <http://www.eia.doe.gov/oiaf/aeo/gas.html>.

year domestic supply at current rates of production.<sup>49</sup> Shale gas now accounts for nearly a third of total U.S. gas reserves, and the EIA estimates that shale resources will provide 24 percent of total U.S. natural gas supply by 2035, up from 6 percent currently.<sup>50</sup>

By contrast, recent proposals to open new areas of the Outer Continental Shelf (OCS) for gas production are unlikely to lead to substantial new production or to significant downward pressure on prices. According to EIA, less than 7 percent of total U.S. proven natural gas reserves are OCS offshore reserves. EIA estimates that 73 percent of these technically recoverable natural gas resources in the OCS (or all but 2 percent of total proven natural gas reserves) are already available for leasing and development.<sup>51</sup> Furthermore, EIA's analysis found that "lower 48 natural gas production is not projected to increase substantially by 2030 as a result of increased access to the OCS."<sup>52</sup>

Development of onshore unconventional resources has stressed water availability and quality in some areas. The Energy Policy Act of 2005 exempted hydraulic fracturing from regulation under the Safe Drinking Water Act, which has intensified concerns about the potential environmental impacts of hydraulic fracturing, focusing primarily on the potential for fracturing fluid, which may include chemical lubricants, gels, and biocides, to contaminate water supplies.<sup>53</sup> Coalbed methane production—another form of unconventional gas development—releases saline water from the coal seams that can also contain arsenic, lead and other heavy metals<sup>54</sup> and must be dealt with properly to avoid contamination of water supplies or destruction of pasture as has occurred in some areas of Wyoming.<sup>55</sup> In some areas of the country, water supply systems are struggling to meet the demands of increased natural gas production on top of existing drinking and agriculture usage.<sup>56</sup>

Natural gas also comes with the same price volatility concerns as oil. Between 2002 and 2008, average monthly U.S. well head prices soared more than 400 percent. Just a year later, in 2009, prices had fallen by two-thirds from their high in 2008. This has had a deleterious effect on some industries that rely on natural gas as a key input—such as pulp and paper, metals, glass, and plastic—as well as end users like farmers, who must spend much more for natural gas-based fertilizer.

<sup>49</sup> Potential Gas Committee, Press Release: "Potential Gas Committee Reports Unprecedented Increase in Magnitude of Natural Gas Resource Base," June 18, 2009. Available at <http://www.energyindepth.org/wp-content/uploads/2009/03/potential-gas-committee-reports-unprecedented-increase-in.pdf>.

<sup>50</sup> Energy Information Administration, Annual Energy Outlook 2010, available at <http://www.eia.doe.gov/oiaf/aeo/>.

<sup>51</sup> Energy Information Administration, Impacts of Increased Access to Oil and Natural Gas Resources in the Lower 48 Federal Outer Continental Shelf (2007), available at <http://www.eia.doe.gov/oiaf/aeo/otheranalysis/ongr.html>.

<sup>52</sup> Id.

<sup>53</sup> Steve Hargreaves, Natural gas vs. contaminated water, CNNMoney.com, July 29, 2008, available at [http://money.cnn.com/2008/07/28/news/economy/shale\\_drilling/index.htm](http://money.cnn.com/2008/07/28/news/economy/shale_drilling/index.htm).

<sup>54</sup> U.S. Geological Survey, Fact Sheet FS-156-00, Water Produced With Coal Bed Methane (Nov. 2000), available at <http://pubs.usgs.gov/fs/fs-0156-00/fs-0156-00.pdf>.

<sup>55</sup> Hal Clifford, Wyoming's powder key, High Country News, Nov. 5, 2001, available at <http://www.hcn.org/issues/214/10823>.

<sup>56</sup> Vickie Welborn, "Competition for Water Raises Concerns" Shreveport Times, August 8, 2008.

### *Nuclear*

With a fleet of 104 commercial nuclear reactors, the United States is by far the largest producer of nuclear power in the world. In 2009, nuclear accounted for 20 percent of total U.S. electric generation, a share that has remained relatively stable over the last two decades. While the number of commercial reactors has remained the same since 1998, the fleet capacity factor—or the percentage of the time the generators are running at full capacity—has increased from 78 percent to more than 90 percent.<sup>57</sup> While U.S. reactors were designed and commissioned to operate for 40-year lives, 59 commercial reactors have now received 20-year license extensions from the Nuclear Regulatory Commission (NRC), giving them up to a total of 60 years of operation. Extensions for 21 additional reactors are currently under review, and more are anticipated, according to NRC.<sup>58</sup>

Electric utilities have filed 17 applications with the Nuclear Regulatory Commission for 26 new reactor operating licenses since 2007, the first new reactor applications submitted to U.S. regulators in three decades. While some are reading this activity as an indication of a nuclear “renaissance”, the nuclear industry continues to face significant challenges. The cost of new nuclear plants has ballooned in recent years and now approaches or exceeds the total market capitalization of many electric utility companies.<sup>59</sup>

While nuclear power is a mature technology that has been around for more than half a century, the industry’s long-running inability to build safe reactors on time and on budget continues to make financing very difficult for new projects. According to the Congressional Budget Office for the more than 40 nuclear power projects underway since the partial-core meltdown at Three Mile Island in 1979, construction cost overruns exceeded 250 percent. For the 67 nuclear plants that have come online in the United States since 1976, on average more than 13 years passed between when a new plant application was officially accepted by the Nuclear Regulatory Committee and when the plant began commercial operation.<sup>60</sup> The last reactor completed in the United States came online in 1996 after a construction period of 23 years. Since the nuclear building boom of the 1970s and 1980s, the nuclear industry and the number of skilled nuclear workers in the United States has contracted substantially, making a nuclear resurgence all the more difficult and less likely to be driven by domestic workers.

Cost projections for new nuclear power plants have also increased dramatically and made it unlikely new projects can be financed without taxpayer-backed loan guarantees. The nuclear industry projects a new large reactor would cost around \$2 billion to construct, which would place new projects at the low end of the \$2 to \$6 billion range seen for reactors completed since the mid-1980s

<sup>57</sup> Energy Information Administration, Annual Energy Review, 2009, p. 277.

<sup>58</sup> Nuclear Regulatory Commission, Status of License Renewal Applications and Industry Activities, February 3, 2010. Available at <http://www.nrc.gov/reactors/operating/licensing/renewal/applications.html>.

<sup>59</sup> Lovins, Amory B., Invited testimony to the Select Committee on Energy Independence and Global Warming, Hearing on “Nuclear Power in a Warming World: Solution or Illusion?” (March 12, 2008) available at <http://globalwarming.house.gov/tools/assets/files/0401.pdf>.

<sup>60</sup> *Id.*

(in 2007 dollars).<sup>61</sup> However, the 2007 Keystone Center study has found costs for the same plant could reach \$4 billion. New plants are now expected to cost \$6–8 billion each,<sup>62</sup> a figure which approaches or exceeds the total market capitalization of many electric power companies.

In light of these costs and risks, it remains in doubt whether private financing will be available for any new nuclear facilities without the assurance of federal government guarantees on the loans. The Congressional Budget Office has estimated the risk of default on such loans to be “very high—well above 50 percent.”<sup>63</sup>

The existing Department of Energy Loan Guarantee Program has been authorized to award \$38.5 billion in loan guarantees,<sup>64</sup> more than half of which is specifically targeted at jumpstarting nuclear power. The Department has received 19 applications for federal loan guarantees to build 22 proposed nuclear power plants, totaling \$122 billion in requested assistance. The Director of the Department’s loan program office has stated that \$18.5 billion could probably accommodate only two power plants unless coupled with additional financing assistance.<sup>65</sup> Additional financing from foreign government export credit agencies, in exchange for agreements on the sourcing of reactor components, could—in conjunction with the federal loan guarantees—increase the number of nuclear plants receiving loan guarantees to four. The Nuclear Energy Institute has stated that at no time “in the immediate future” are private companies anticipated to be able to finance new nuclear plants without the aid of federal loan guarantees. In recognition of this, the Nuclear Energy Institute endorsed the major energy infrastructure financing mechanism—the Clean Energy Deployment Administration—that was included in the American Clean Energy and Security Act that passed the House of Representatives in 2009.<sup>66</sup>

Loan guarantee commitments are offered conditionally, contingent upon an applicant subsequently receiving both a reactor design certification and a construction and operating license from the NRC.<sup>67</sup> On February 16, 2010, the Department of Energy announced the first of these nuclear loan guarantees, an \$8.3 billion award to a consortium led by the Southern Company to support the construction of two nuclear reactors in Georgia.<sup>68</sup> The other recent loan guarantee deal that was in the final stages fell through when the applicant, Constellation Energy, pulled out after a disagreement over the financing terms offered by the loan guarantee pro-

<sup>61</sup> Congressional Research Service, Report RL33558, Nuclear Energy Policy, by Mark Holt (October 21, 2010) available at <http://www.crs.gov/Products/RL/PDF/RL33558.pdf>.

<sup>62</sup> Nuclear Energy Institute, Policies That Support New Nuclear Power Plant Development (October 2009) available at <http://www.nei.org/resourcesandstats/documentlibrary/newplants/factsheet/policiesupportnewplantdevelopment/?page=2>.

<sup>63</sup> Congressional Budget Office, Cost Estimate, S.14, Energy Policy Act of 2003, at 11 (May 7, 2003), available at <http://www.cbo.gov/ftpdocs/42xx/doc4206/s14.pdf>.

<sup>64</sup> This does not include \$2.5 billion appropriated through the Recovery Act which is estimated to support approximately \$21 billion in loan guarantees. Department of Energy, Loan Guarantee Programs, (August 2010) available at <http://www.energy.gov/recovery/lgprogram.htm>.

<sup>65</sup> Katherine Ling, “Nuclear Power: 17 apply for DOE loan guarantees, far exceeding available cash,” Greenwire, Oct. 2, 2008.

<sup>66</sup> Nuclear Energy Institute, June 26, 2009 available at <http://www.nei.org/newsandevents/senatevotenuclearplantdeployment/nei-welcomes-inclusion-of-clean-energy-provisions-in-climate-bill-okd-by-house/>.

<sup>67</sup> Secretary Stephen Chu response to questions from Rep. Markey, December 22, 2009. See [http://globalwarming.house.gov/mediacenter/pressreleases\\_2008?id=0186#main\\_content](http://globalwarming.house.gov/mediacenter/pressreleases_2008?id=0186#main_content).

<sup>68</sup> New York Times (ClimateWire), *DOE Delivers Its First, Long-Awaited Nuclear Loan Guarantee*, February 17, 2010, available at <http://www.nytimes.com/cwire/2010/02/17/17climatewire-doe-delivers-its-first-long-awaited-nuclear-71731.html>.



gram.<sup>69</sup> The Georgia project is unique in that, under Georgia state law, the consortium can begin recovering project costs from rate payers while the plants are under construction, several years before the project generates any power for its customers. This is another financing mechanism that utilities in some states are looking to replicate to help cover the huge cost of new nuclear projects.

Beyond the financing problem, nuclear power faces a major challenge in remaining competitive in electricity markets where low cost generation has priority dispatch to the grid. While the cost of nuclear power is very low on an operating basis, when the huge upfront capital costs are calculated into electricity rates charged to consumers, nuclear power becomes very expensive. Over the long term, the way nuclear power will overcome this and become more competitive is through the realization of its low-carbon benefits. That is why the CEOs of Constellation Energy (60 percent of its electric generation is from nuclear power), Exelon (the largest nuclear plant operator in the United States), Florida Power and Light (20 percent of generation from nuclear), and Entergy (50 percent of generation from nuclear) all support a national cap on greenhouse gas emissions.

Long-term nuclear waste disposal continues to be a problem as well. The Obama Administration requested no funding for the Yucca Mountain repository for FY 2011, instead determining that developing the Yucca Mountain repository is not a workable option and the nation needs a different solution for nuclear waste disposal.<sup>70</sup> Alternatives to Yucca Mountain are being evaluated by the Blue Ribbon Commission on America's Nuclear Future, which was formally established by the Department of Energy on March 1, 2010.

### *Renewables*

Renewable sources of energy can and should become a major contributor to the U.S. electricity supply within the foreseeable future. Renewables such as wind, solar, biomass, geothermal, and hydro currently generate 10.5 percent of the country's electricity, with non-hydro renewables responsible for 3.6 percent.<sup>71</sup> Even with no changes to current policy, EIA projects renewable generation to account for 45 percent of the increase in total generation through 2035. Assuming a long-term extension of the production tax credit (PTC), renewable energy's share of increased electricity generation grows to 61–65 percent through 2035.<sup>72</sup> Reaching 20 percent of total generation by 2020 is an ambitious, but achievable target for renewables based on the current state of the technologies and the available renewable resources.

Adoption of a national renewable electricity standard (RES) requiring that 20 percent of electricity generated in the United States come from renewable sources by 2020 should be a centerpiece of our national energy strategy. A key driver of renewable energy growth in the United States has been state-level RESs. Thirty

<sup>69</sup>The Washington Post, *Constellation Energy shelves plan for Calvert Cliffs reactor*, October 13, 2010, available at <http://www.washingtonpost.com/wp-dyn/content/article/2010/10/08/AR2010100807370.html>.

<sup>70</sup>Department of Energy, FY2011 Budget Justification.

<sup>71</sup>Energy Information Administration, *Annual Energy Review 2007*, Table 8.2b Electricity Net Generation: Electric Power Sector, Selected Years, 1949–2007 (2007).

<sup>72</sup>Energy Information Administration, *Annual Energy Outlook*, 2010.

States and the District of Columbia now have enforceable RESs or similar laws. In 2009, these states were responsible for 77 percent of total U.S. renewable energy.<sup>73</sup>

The types and quantities of renewable electricity required under these programs vary widely among the states, but it has become clear that states with RESs are deploying more renewable electricity generation than states without them. At the same time, RES policies are having little or no impact on consumer electricity rates and in many markets the renewable electricity is priced competitively with fossil fuel-based generation.<sup>74</sup> The House of Representatives passed a national RES of 15 percent by 2020 in the 110th Congress and a national RES of 20 percent by 2020 in the 111th Congress, but neither measure passed in the Senate. Like many state programs, these House-passed RESs allowed a percentage of the renewable energy requirement to be fulfilled through utility programs that increase energy efficiency. This energy efficiency mechanism provides utilities with increased flexibility and gives regions with less renewable resources another way to achieve compliance, even providing lower utility bills to consumers in the process.

Tax incentives—including the existing Production Tax Credit (PTC) and the Investment Tax Credit (ITC)—also play a key role in deploying renewable electricity generation, providing a policy “bridge” that is helping the renewable energy industry survive in an environment where the benefits of low- and zero-carbon emissions are not properly valued by the market. These two policies have been a major driver of renewable energy development over the past several years by giving individuals, businesses, and utilities incentives to invest in renewable energy generation.

In response to a collapsed tax equity market in late 2008 that made it difficult for renewable energy developers to use these tax credits, the 1603 Treasury Grant Program was included in the American Recovery and Reinvestment Act to temporarily allow renewable energy developers to convert tax credits into cash grants of equal value. The highly successful program allowed the renewable energy industry to continue to grow during the recession, creating 55,000 jobs and directly leading to the deployment of 4,250 megawatts of renewable energy in 2009.<sup>75</sup>

The federal government has an important role to play in eliminating regulatory barriers to the expansion of renewable electricity generation. Despite the success of state-level initiatives to promote renewables, the balkanized structure for electricity regulation and the inconsistency of federal and state incentive programs have created a relatively unstable investment climate for the domestic renewable electricity market, limiting financing opportunities for individual projects and domestic manufacturing capacity. The federal government has a key role to play in helping to rationalize these programs and regulatory regimes to encourage expanded renewable electricity generation.

<sup>73</sup> Energy Information Administration, Renewable Energy Consumption and Electricity Preliminary Statistics 2009, available at [http://www.eia.doe.gov/cneaf/alternate/page/renew\\_energy\\_consump/rea\\_prereport.html](http://www.eia.doe.gov/cneaf/alternate/page/renew_energy_consump/rea_prereport.html).

<sup>74</sup> Ryan Wiser & Galen Barbose, Renewable Portfolio Standards in the United States: A Status Report with Data Through 2007, Lawrence Berkeley National Laboratory (April 2008), available at <http://eetd.lbl.gov/ea/EMS/reports/lbnl-154e-revised.pdf>.

<sup>75</sup> American Wind Energy Association, Press Release: Tens of Thousands of Layoffs in American Wind Energy Seen at State in Tax Extender Package, December 7, 2010, available online at [http://www.awea.org/rn\\_release\\_12-07-10.cfm](http://www.awea.org/rn_release_12-07-10.cfm).

## Wind

The global market for wind power grew 32 percent in 2009, as more than 38,000 megawatts of new wind capacity was installed worldwide. More than 10,000 megawatts of this was installed in the United States<sup>76</sup> where, for the second consecutive year, more wind capacity was installed than any other source.<sup>77</sup> Over the last five years, wind installations in the United States have expanded 39 percent annually.<sup>78</sup> Four U.S. states—all of which have state RESs—account for 51 percent of total U.S. wind capacity: Texas, Iowa, California, and Washington.<sup>79</sup> However, while the U.S. is the global leader in installed wind capacity, China is catching up quickly and may overtake the United States in 2010 or 2011.<sup>80</sup>

Department of Energy research suggests generating 20 percent of electricity from wind in the United States by 2030 is an ambitious yet feasible scenario, which would require a build-out of 300,000 megawatts of wind capacity.<sup>81</sup> The EIA projects 27,000 megawatts to be installed through 2013, which would bring total installed capacity to 62,000 megawatts.<sup>82</sup> To meet the 20 percent goal, wind turbine production capacity would have to ramp up to 16,000 new megawatts per year by around 2018,<sup>83</sup> up from a current baseline production capacity of nearly 8,000 megawatts per year.<sup>84</sup>

As wind technology continues to improve, prices are falling and capacity factors are increasing. The cost of wind energy over the past 20 years has dropped from 40 cents per kWh to 4 to 6 cents per kWh at good sites. Increases in the capacity factor of the turbines—or the percentage of time in which they are producing at their full capacity—have grown 11 percent over the past two years and will continue to increase as the technology improves. While most new wind turbines in the United States produce 1.5 to 2.5 megawatts of power, superconducting materials may enable the construction of 10 megawatt turbines in the near future. These larger machines will be well suited for offshore wind developments, plans for which have accelerated recently. In addition to the 130-turbine wind farm off the coast of Massachusetts that is poised to start construction in 2011, Cape Wind, there are at least 11 other

<sup>76</sup> American Wind Energy Association, U.S. Wind Industry Annual Market Report, Year Ending 2009, Available at [http://e360.yale.edu/images/digest/Annual\\_Market\\_Report\\_Wind.pdf](http://e360.yale.edu/images/digest/Annual_Market_Report_Wind.pdf).

<sup>77</sup> Energy Information Administration/Electric Power Annual 2008, available at <ftp://ftp.eia.doe.gov/electricity/034808.pdf>; and Energy Information Administration/Electric Power Annual 2009, U.S. Energy Information Administration/Electric Power Annual 2009, page 19, see table 1.5. *Capacity Additions, Retirements and Changes by Energy Source, 2009* available at [http://www.eia.doe.gov/cneaf/electricity/epa/epaxlfile1\\_5.pdf](http://www.eia.doe.gov/cneaf/electricity/epa/epaxlfile1_5.pdf).

<sup>78</sup> American Wind Energy Association, Windpower Outlook 2010, Available at [http://www.awea.org/documents/reports/Outlook\\_2010.pdf](http://www.awea.org/documents/reports/Outlook_2010.pdf).

<sup>79</sup> Energy Information Administration, Electric Power Industry 2009: Year in Review (November 2010) available at [http://www.eia.doe.gov/cneaf/electricity/epa/epa\\_sum.html](http://www.eia.doe.gov/cneaf/electricity/epa/epa_sum.html).

<sup>80</sup> Pew Environment Group, *Who's Winning the Clean Energy Race?* (2010), Page 13. Available at <http://www.pewglobalwarming.org/cleanenergyeconomy/pdf/PewG-20Report.pdf>.

<sup>81</sup> U.S. Department of Energy, 20% Wind Energy By 2030: Increasing Wind Energy's Contribution to the U.S. Electricity Supply (July 2008). Available at <http://www1.eere.energy.gov/windandhydro/pdfs/41869.pdf>.

<sup>82</sup> Energy Information Administration, Annual Energy Outlook 2011.

<sup>83</sup> U.S. Department of Energy, 20% Wind Energy By 2030: Increasing Wind Energy's Contribution to the U.S. Electricity Supply (July 2008). Available at <http://www1.eere.energy.gov/windandhydro/pdfs/41869.pdf>.

<sup>84</sup> Bloomberg New Energy Finance, Ethan Zindler, *Fostering Green Technology Innovation*, slide presentation, July 8, 2010.

offshore wind projects in development across seven states.<sup>85</sup> The available wind resources off U.S. coasts are massive, estimated by the National Renewable Energy Laboratory to be 4,150,000 megawatts, or more than four times the capacity of all existing U.S. electrical generation.<sup>86</sup>

### *Solar*

More energy in the form of solar radiation strikes the Earth's surface in an hour than humanity uses in an entire year. Capturing this energy and converting it into electricity is primarily done through photovoltaic cells that convert sunlight into direct electrical current and concentrating solar power, which concentrates the sun's energy using huge mirrors or lenses and then uses this heat to run a conventional turbine.

Solar photovoltaics (PV) have experienced explosive growth over the last several years, with world capacity growing 44 percent in 2009 alone<sup>87</sup> and installed capacity has grown from 1,200 megawatts in 2000 to more than 20,000 megawatts in 2009.<sup>88</sup> Total U.S. solar electric capacity climbed past 2,000 megawatts in 2009, enough to serve more than 350,000 homes. Solar has expanded out of the residential and commercial rooftop niche, with more than 6,000 megawatts of utility-scale solar projects announced in the United States. The National Renewable Energy Laboratory has identified the potential for nearly 7,000,000 megawatts of solar thermal power generation in the southwestern United States, roughly seven times current U.S. electric generating capacity. Globally, research from the European Photovoltaic Industry Association and Greenpeace suggests that by 2030, global PV capacity could reach 1,864,000 megawatts and satisfy the electricity needs of 14 percent of the world's population.<sup>89</sup>

Technology advances and increases in the scale of production in the solar industry have exceeded those of any other renewable energy sector as prices for PV modules have fallen to less than \$3.50 per watt from almost \$100 per watt in 1975.<sup>90</sup> Solar PV prices have declined an average of 4 percent per year over the past 15 years.<sup>91</sup> The accumulation of innovations and movement down the technological learning curve experienced in solar PV is somewhat analo-

<sup>85</sup>The Washington Post, *Offshore wind farm near Cape Cod, first in U.S., gets federal approval*, April 29, 2010, available at <http://www.washingtonpost.com/wp-dyn/content/article/2010/04/28/AR2010042804398.html>.

<sup>86</sup>National Renewable Energy Laboratory, *Large-Scale Offshore Wind Power in the United States; Assessment of Opportunities and Barriers* (September 2010), available at <http://www.nrel.gov/wind/pdfs/40745.pdf>.

<sup>87</sup>Solar Energy Industry Association, *US Solar Industry Year in Review 2009* (April 15, 2010) available at <http://seia.org/galleries/default-file/2009%20Solar%20Industry%20Year%20in%20Review.pdf>.

<sup>88</sup>European Photovoltaic Industry Association and Greenpeace, *Solar Generation V—2008 Solar electricity for over one billion people and two million jobs by 2020* (2008), available at <http://www.greenpeace.org/raw/content/international/press/reports/solar-generation-v-2008.pdf>.

<sup>89</sup>European Photovoltaic Industry Association and Greenpeace, *Solar Generation V—2008 Solar electricity for over one billion people and two million jobs by 2020* (2008), available at <http://www.greenpeace.org/raw/content/international/press/reports/solar-generation-v-2008.pdf>.

<sup>90</sup>This reflects crystalline silicon cell technology, which forms about 90% of the solar cell market. See Solar Buzz, *Solar Module Retail Price Highlights: December 2010*, Available at <http://www.solarbuzz.com/Moduleprices.htm>.

<sup>91</sup>Solarbuzz, *Fast Solar Energy Facts: Global Performance*, available at <http://www.solarbuzz.com/FastFactsIndustry.htm>.

gous to Moore's Law<sup>92</sup> in microelectronics. Over the long term, every time deployment of solar PV capacity doubles, the cost of solar falls by 18 percent. Projected forward, this learning curve would have solar PV reaching grid parity by 2020.<sup>93</sup> The Department of Energy's Solar America Initiative seeks to make solar PV cost-competitive with conventional forms of electricity by 2015. Huge investments in new production of polysilicon (the critical input for most PV cells) have come online recently, ending a temporary materials shortage and leading to a solar module price drop upwards of 50 percent over the past 2 years.<sup>94</sup>

### *Geothermal*

The Earth produces more internal energy, in the form of heat, than humans can possibly use. Like solar, the use of geothermal energy is only limited by technology and the associated costs. Unlike solar, geothermal is a baseload power resource and not vulnerable to intermittency problems. While the United States has the most installed capacity of geothermal energy in the world—about 2,500 megawatts across six states—the amount of electricity produced from geothermal energy has essentially been flat for the past two decades. However, the American Recovery and Reinvestment Act created a building boom in the United States recently with 188 projects currently in different stages of development across fifteen states which could produce as much as 7,875 MW of new electric power.<sup>95</sup> The sector is expected to grow rapidly in several other countries as well over the next 5 years, ramping up global capacity by 78 percent to more than 19,000 megawatts in 2015.<sup>96</sup>

The United States has massive, untapped geothermal energy resources. Scientists with the U.S. Geological Survey (USGS) recently found that the electric generation potential from currently identified geothermal systems distributed over 13 U.S. states is more than 9,000 megawatts. Their estimated power production potential from yet to be discovered geothermal resources is more than 30,000 megawatts. An additional 500,000 megawatts may be available by harnessing geothermal reservoirs characterized by high temperature, but low permeability, rock formations.<sup>97</sup>

### *Biomass*

Biomass currently supplies more electricity in the United States than wind, solar, and geothermal power combined, and the potential for additional generation from this energy source is vast. Bio-

<sup>92</sup> Moore's law describes the long-term trend in computing hardware in which the number of transistors that can be placed on an integrated circuit has doubled approximately every two years.

<sup>93</sup> Emanuel Sachs, in testimony to the Select Committee on Energy Independence and Global Warming, Hearing on "New Technologies: What's Around the Corner" (July 28, 2009) available at [http://globalwarming.house.gov/pubs?id=0007#main\\_content](http://globalwarming.house.gov/pubs?id=0007#main_content).

<sup>94</sup> Solar Energy Industry Association, US Solar Industry Year in Review 2009 (April 15, 2010) available at <http://seia.org/galleries/default-file/2009%20Solar%20Industry%20Year%20in%20Review.pdf>.

<sup>95</sup> Geothermal Energy Association, Geothermal grows 26% in 2009 GEA identifies new projects underway in 15 states, April 2010 Update Release, Available at [http://geo-energy.org/pressReleases/April2010\\_Final.aspx](http://geo-energy.org/pressReleases/April2010_Final.aspx).

<sup>96</sup> ABS Energy Research, The Geothermal Energy Report—Direct Use and Power Generation, Edition 6 2010, available at <http://www.absenergyresearch.com/cmsfiles/reports/Geothermal-Report-2010.pdf>.

<sup>97</sup> U.S. Geological Survey, Fact Sheet: Assessment of Moderate- and High-Temperature Geothermal Resources of the United States (2008), available at <http://pubs.usgs.gov/fs/2008/3082/pdf/fs2008-3082.pdf>.

mass available for electricity generation includes residues from forests, primary mills, and agriculture, as well as dedicated energy crops and urban wood wastes. Biomass can be used as the sole fuel source for power plants, or it can be used in conventional power plants to substitute for a portion of the traditional fuel, typically coal, in a process called co-firing. While most co-firing plants use biomass for between 1 and 8 percent of heat input,<sup>98</sup> biomass can effectively substitute for up to 20 percent of the coal used in the boiler.<sup>99</sup> In addition to reducing lifecycle greenhouse gas emissions, co-firing biomass also lowers fuel costs, avoids landfilling, and reduces emissions of sulfur oxide and nitrogen oxide.

An EIA analysis of the impacts of a 15 percent national renewable electricity requirement found that electricity production from biomass could grow by a factor of eight between 2005 and 2030.<sup>100</sup> Most of this generation would come in the southeastern United States, where nearly a third of the country's biomass feedstock potential exists.<sup>101</sup> The EIA found that the Southeast region could meet nearly its entire 15 percent

renewable requirement through 2020 with indigenous biomass resources.<sup>102</sup> Using biomass for electricity would help the region create thousands of jobs, increase global export opportunities, and keep billions of dollars in the Southeast that would have otherwise left to import coal and other fuels from other states and countries.

### *Hydropower*

Hydropower is the largest source of installed renewable electricity in the United States, providing 7 percent of U.S. electricity in 2009, and accounts for two-thirds of U.S. electricity generated from renewable resources.<sup>103</sup> Only China, Canada, and Brazil generate more electricity from hydropower than the United States.<sup>104</sup> The 78,000 megawatts of installed capacity in the United States has remained relatively unchanged over the past 3 decades.<sup>105</sup> However, with only 3 percent of the 80,000 existing dams in the United States currently generating electricity, there exists great potential for increased hydropower capacity additions. The vast majority of dams in the United States were built and are operated for purposes such as flood control navigation and water supply. The hydropower industry projects nearly 19,000 megawatts of new hydropower capacity could be added by 2025 at existing dam facilities through efficiency upgrades and capacity additions with the passage of an RES. A strong federal RES could also incentivize nearly

<sup>98</sup> Zia Haq, Energy Information Administration, Biomass for Electricity Generation, available at <http://www.eia.doe.gov/oiaf/analysispaper/biomass/>.

<sup>99</sup> Federal Energy Management Program (FEMP), Biomass Cofiring in Coal-fired Boilers, DOE/EE-0288. (2004), available at [http://www1.eere.energy.gov/femp/pdfs/fta\\_biomass\\_cofiring.pdf](http://www1.eere.energy.gov/femp/pdfs/fta_biomass_cofiring.pdf).

<sup>100</sup> Energy Information Administration, Impacts of a 15-Percent Renewable Portfolio Standard at 9 (Table 2: Summary Results) (June 2007), available at [http://www.eia.doe.gov/oiaf/servicert/prps/pdf/sroiaf\(2007\)03.pdf](http://www.eia.doe.gov/oiaf/servicert/prps/pdf/sroiaf(2007)03.pdf).

<sup>101</sup> Marie Walsh et al., Oak Ridge National Laboratory, Biomass Feedstock Availability in the United States: 1999 State Level Analysis (Jan. 2000), available at <http://bioenergy.ornl.gov/resourcedata/index.html>.

<sup>102</sup> Energy Information Administration, Regional Generation Impacts of a 15-Percent Renewable Portfolio Standard (RPS) (Supplement to Report #: SR-OIAF/2007-03) (June 2007), available at [http://www.eia.doe.gov/oiaf/servicert/prps/pdf/regional\\_generation.pdf](http://www.eia.doe.gov/oiaf/servicert/prps/pdf/regional_generation.pdf).

<sup>103</sup> National Hydropower Association, Hydropower: For a Clean Energy Future Fact Sheet, available online at <http://www.hydro.org/hydrofacts/two-pager4.pdf>.

<sup>104</sup> Energy Information Administration, International Electricity Generation, available at <http://www.eia.doe.gov/emeu/international/electricitygeneration.html>.

<sup>105</sup> Energy Information Administration, Annual Energy Review 2009, at 264.

16,000 more megawatts of hydro capacity installations by 2025 using wave, ocean current, tidal, and inland hydrokinetic resources. None of these nearly 35,000 megawatts of new facilities would require a new dam, and they would only scratch the surface of the 371,000 megawatts of new hydro resource potential in the United States.<sup>106</sup>

## II. AN OVERVIEW OF THE CLIMATE CHANGE CRISIS

A clear scientific consensus now holds that climate change is occurring and that greenhouse gases (GHGs) emitted from human activities are largely responsible. During the past two centuries of industrialization, atmospheric concentrations of GHGs have increased dramatically, a shift comparable to that seen over the last 20,000 years as the Earth naturally transitioned out of its last ice age.<sup>107</sup> Concentrations of carbon dioxide (CO<sub>2</sub>), the dominant GHG emitted by human activities, have increased from about 280 parts per million (ppm) in 1750<sup>108</sup> to nearly 390 ppm in 2010<sup>109</sup> and are now approximately 30 percent above the highest levels of the preceding 800,000 years.<sup>110</sup> This has produced a dramatic shift in ocean chemistry, disrupting the delicate acid-base balance to which marine organisms are accustomed. Global average surface temperature has increased about 1.4°F over the past century. These changes are already causing a broad range of adverse impacts to human and natural systems. Failure to rapidly reduce GHG emissions will result in even more catastrophic impacts at a global scale.

If emissions of GHGs continue to grow unabated, the likely near- to medium-term impacts of unchecked climate change may include:

- Increasingly severe water scarcity, subjecting up to 1.2 billion additional people in Asia, up to 250 million people in Africa,<sup>111</sup> and up to 80 million people in Latin America to increasing water stress by 2020.<sup>112</sup>
- Further warming and acidification of the oceans, severely impacting global fisheries and contributing to the collapse of coral reefs around the world.<sup>113</sup> Ocean acidification has already risen by about 30 percent due to increased carbon pollution since 1750.
- Expected sea level rise of approximately 3 to 4 feet and possibly as much as 6.5 feet by 2100,<sup>114</sup> subjecting roughly a billion people living in coastal areas around the world to in-

<sup>106</sup> Navigant Consulting, *Job Creation Opportunities in Hydropower* (September 20, 2009).

<sup>107</sup> As reported by the Intergovernmental Panel on Climate Change's Fourth Assessment Report, the total CO<sub>2</sub>-equivalent concentration of all GHGs is 455 ppm. See <http://www.ipcc.ch/>.

<sup>108</sup> Intergovernmental Panel on Climate Change, Working Group I: The Physical Science Basis (2007). Available at [http://www.ipcc.ch/publications\\_and\\_data/ar4/wg1/en/faq-2-1.html](http://www.ipcc.ch/publications_and_data/ar4/wg1/en/faq-2-1.html).

<sup>109</sup> National Oceanic and Atmospheric Administration, 2010. Recent Mauna Loa CO<sub>2</sub>. Available at <http://www.esrl.noaa.gov/gmd/ccgg/trends/>.

<sup>110</sup> Karl, T., J. Melillo, and T. Peterson, (eds.), *Global Climate Change Impacts in the United States*, Cambridge University Press. (2009) Available at <http://www.globalchange.gov/publications/reports/scientific-assessments/us-impacts>.

<sup>111</sup> Intergovernmental Panel on Climate Change, *Climate Change, 2007. Impacts, Adaptation and Vulnerability, Summary for Policy Makers*.

<sup>112</sup> Intergovernmental Panel on Climate Change, 2008. *Climate Change and Water*.

<sup>113</sup> National Oceanic and Atmospheric Administration, 2008. *Ocean Acidification State of the Science Fact Sheet*, available at [http://www.pmel.noaa.gov/co2/OA/Ocean\\_Acidification%20FINAL.pdf](http://www.pmel.noaa.gov/co2/OA/Ocean_Acidification%20FINAL.pdf).

<sup>114</sup> Karl, T., J. Melillo, and T. Peterson, (eds.), 2009. *Global Climate Change Impacts in the United States*, Cambridge University Press. Available at <http://www.globalchange.gov/publications/reports/scientific-assessments/us-impacts>.

creased risk of inundation, storm surges, coastal erosion, and saltwater intrusion into freshwater supplies.

- Increased heavy precipitation events and flooding, as well as more powerful hurricanes.<sup>115, 116</sup>
- Mass extinction of species, perhaps 40 percent of the world's species by the latter half of this century.<sup>117</sup>
- Multiple adverse effects on public health associated with more frequent and intense heat waves, ground-level ozone air pollution, and the spread of infectious diseases.<sup>118</sup>

Tragically, these impacts will fall disproportionately on vulnerable communities, particularly in developing countries that are least responsible for climate change and least able to adapt to its impacts. Still, the United States and other developed countries will suffer devastating economic, environmental, and human health impacts if climate change continues unabated.

The potential costs of climate change are staggering. Economic studies suggest that climate change could cost the global economy 5 to 20 percent of gross domestic product (GDP).<sup>119</sup> In the United States, even a narrow range of climate change impacts could slash GDP 3.6 percent by 2100.<sup>120</sup> These costs far outweigh the potential costs of economy-wide legislation to reduce carbon pollution.<sup>121</sup>

Climate change presents a serious and growing risk to the U.S. security interests around the world. Climate change is expected to act as a "threat multiplier"<sup>122</sup> by increasing the risk of water and food scarcity, mass migration, resource conflict, and political destabilization. Climate change will also adversely affect military and strategic infrastructure, both in the United States and abroad.

In order to avert the most catastrophic consequences of climate change, human-caused GHG emissions must be cut substantially. The Intergovernmental Panel on Climate Change (IPCC), the leading international climate science body, has concluded that to secure even a 50–50 chance of avoiding the dangerous climate change associated with a 3.6 °F increase in global average surface temperature, global GHG emissions must be reduced by 50 to 85 percent by 2050.<sup>123</sup> This requires the United States and other developed countries to reduce emissions by at least 80 percent by 2050.<sup>124</sup>

<sup>115</sup> Knutson, T., 2008. Global Warming and Hurricanes. Available at <http://www.gfdl.noaa.gov/global-warming-and-hurricanes>.

<sup>116</sup> Karl, T., J. Melillo, and T. Peterson, (eds.), 2009. Global Climate Change Impacts in the United States, Cambridge University Press. Available at <http://www.globalchange.gov/publications/reports/scientific-assessments/us-impacts>.

<sup>117</sup> Intergovernmental Panel on Climate Change, Climate Change, 2007. Impacts, Adaptation and Vulnerability, Summary for Policy Makers.

<sup>118</sup> Intergovernmental Panel on Climate Change, Climate Change, 2007. Impacts, Adaptation and Vulnerability. Available at [http://www.ipcc.ch/publications\\_and\\_data/ar4/wg2/en/ch8s8-4-2.html](http://www.ipcc.ch/publications_and_data/ar4/wg2/en/ch8s8-4-2.html).

<sup>119</sup> Stern, N., 2006. Stern Review: The Economics of Climate Change.

<sup>120</sup> Ackerman, F., and E. Stanton, 2008. The Cost of Climate Change: What We'll Pay if Global Warming Continues Unchecked. Natural Resources Defense Council. Available at <http://www.nrdc.org/globalwarming/cost/cost.pdf>.

<sup>121</sup> Ackerman, F., and E. Stanton, 2008. The Cost of Climate Change: What We'll Pay if Global Warming Continues Unchecked. Natural Resources Defense Council. Available at <http://www.nrdc.org/globalwarming/cost/cost.pdf>.

<sup>122</sup> McGuinn, Admiral Dennis, Testimony before the Select Committee on Energy Independence and Global Warming, Not Going Away: America's Energy Security, Jobs and Climate Challenges (2010) Available at <http://globalwarming.house.gov/pubs?id=0024>.

<sup>123</sup> Intergovernmental Panel on Climate Change, 2007. Mitigation of Climate Change Summary for Policymakers; and Luers, A., et al., *How to Avoid Dangerous Climate Change: A Target for U.S. Emission Reductions*. Union of Concerned Scientists. (2007) Available at [http://www.ucsusa.org/global\\_warming/solutions/big\\_picture\\_solutions/a-target-for-us-emissions.html](http://www.ucsusa.org/global_warming/solutions/big_picture_solutions/a-target-for-us-emissions.html).

<sup>124</sup> Intergovernmental Panel on Climate Change, 2007. Mitigation of Climate Change Summary for Policymakers; and Luers, A., et al., *How to Avoid Dangerous Climate Change: A Target*



Strong interim mitigation targets are also needed, including a reduction of U.S. emissions by at least 17 percent by 2020. To accomplish these goals, it is necessary to dramatically increase the amount of clean energy and energy efficiency deployed around the world, an energy technology revolution that the United States must lead.

#### SCIENTIFIC CONSENSUS ON CLIMATE CHANGE

A clear scientific consensus now holds that climate change is happening and that human-caused greenhouse gas (GHG) emissions are the primary cause. “Climate change is occurring, is caused largely by human activities, and poses significant risks for—and in many cases is already affecting—a broad range of human and natural systems.”<sup>125</sup> This is the conclusion of the National Research Council, the leading scientific body in the United States, in their comprehensive assessment *America’s Climate Choices*. In fact, every major professional science organization working in fields relevant to climate change (e.g., the American Meteorological Society, the American Chemical Society, etc.) and national academies around the world agree that human emissions of GHGs are now the dominant driver of climate change. No scientific body of national or international standing rejects the conclusion that climate changes are being driven by human activities.<sup>126, 127</sup> There is now a vast body of scientific evidence that provides the basis for strong mitigation and adaptation actions. The consequences of failing to reduce GHG emissions will be catastrophic.

#### BACKGROUND ON GLOBAL WARMING AND OCEAN ACIDIFICATION

Global warming refers to the global temperature rise and associated impacts from the increase of GHGs in the atmosphere associated with human activities, primarily the burning of fossil fuels. The build-up of these gases enhances the so-called “greenhouse effect” and warms the Earth’s climate system. As the glass of a greenhouse traps warm air inside, these gases trap heat that would otherwise escape into space. Key human-emitted GHGs include carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), ozone, and certain fluorine-containing gases (F-gases) such as chlorofluorocarbons, hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF<sub>6</sub>), and nitrogen trifluoride (NF<sub>3</sub>). The impact of each gas on the climate is determined by its heat-trapping potency, concentration, and atmospheric lifetime. The IPCC declared in its 2007 Fourth Assessment Report that the evidence for global warming is “unequivocal.”<sup>128</sup> Over the last century,

for *U.S. Emission Reductions*. Union of Concerned Scientists. (2007) Available at [http://www.ucsusa.org/global\\_warming/solutions/big\\_picture\\_solutions/a-target-for-us-emissions.html](http://www.ucsusa.org/global_warming/solutions/big_picture_solutions/a-target-for-us-emissions.html).

<sup>125</sup> National Research Council, *America’s Climate Choices* (2010), Available at <http://americasclimatechoices.org/>.

<sup>126</sup> Gleick, Peter, Testimony before the Select Committee on Energy Independence & Global Warming Hearing *Not Going Away: America’s Energy Security, Jobs and Climate Challenges*. (December 1, 2010) Available at [http://globalwarming.house.gov/pubs?id=0024#main\\_content](http://globalwarming.house.gov/pubs?id=0024#main_content).

<sup>127</sup> Scientific societies’ letter to U.S. Senators, (October 21, 2009) Available at [http://www.aaas.org/news/releases/2009/media/1021climate\\_letter.pdf](http://www.aaas.org/news/releases/2009/media/1021climate_letter.pdf).

<sup>128</sup> Intergovernmental Panel on Climate Change, 2007. *The Physical Science Basis, Summary for Policymakers*.

the global average temperature has increased 1.4°F, with almost 90 percent of the warming occurring over the last 50 years.<sup>129</sup>

There is overwhelming scientific evidence that humans are the primary cause of global warming. The GHGs building up in atmosphere are the same type that humans are emitting by burning fossil fuels and clearing forests. Satellite measurements show that these GHGs are permitting less heat to escape out to space and ground observations show that they are heating up Earth's surface. Further, natural causes of climate change are not capable of explaining either the magnitude or patterns of observed warming. If the sun was responsible, for example, warming would be observed throughout the atmosphere. Instead, scientists see the fingerprint of GHGs: warming isolated to the lower atmosphere and cooling in the upper atmosphere. Indeed, the IPCC has estimated that the global warming contribution, or radiative forcing, from human activities is 10 times larger than the best estimates of the changes from solar activity.<sup>130</sup> A 2007 study found that all the trends in solar activity that could influence the temperature of the Earth have been in the opposite direction needed to explain the rise in temperature over the preceding 20 years.<sup>131</sup> In addition to direct observational evidence, modeling results also confirm the human fingerprint on global warming. These fundamental conclusions related to human attribution of climate change were made clear in expert testimony before the Select Committee during the 111th Congress, including in-depth discussion by Dr. Ben Santer of Lawrence Berkeley National Laboratory and Dr. James Hurrell of the National Center for Atmospheric Research.<sup>132</sup> Given abundant evidence, the IPCC concluded in its 2007 assessment that most of the observed global warming of the past half-century is very likely—with greater than 90 percent certainty—due to the increase of heat-trapping gases associated with human activities.<sup>133</sup>

In addition to global temperature rise, human-emitted CO<sub>2</sub> is causing rapid ocean acidification. Excess CO<sub>2</sub> in the atmosphere from human activities enters the ocean, forming carbonic acid and lowering the pH of the seawater. For example, over the mid-1980s to mid-2000s, the upper ocean absorbed approximately 30 percent of the excess CO<sub>2</sub> emitted through human activities.<sup>134</sup> In response, the upper ocean has become 30 percent more acidic over the Indus-

<sup>129</sup> Intergovernmental Panel on Climate Change, 2007. The Physical Science Basis, Summary for Policymakers.

<sup>130</sup> Intergovernmental Panel on Climate Change, 2007. The Physical Science Basis, Summary for Policymakers.

<sup>131</sup> Lockwood and Froehlich, 2007. Recent Oppositely Directed Trends in Solar Climate Forcings and the Global Mean Surface Air Temperature, *Proceedings of the Royal Society*, Vol. 463.

<sup>132</sup> Santer, B. Testimony before the Select Committee on Energy Independence & Global Warming. Hearing entitled *Climate Science in the Political Arena*. (May 20, 2010) Available at [http://globalwarming.house.gov/pubs?id=0019#main\\_content](http://globalwarming.house.gov/pubs?id=0019#main_content); Hurrell, J., 2010. Testimony before the Select Committee on Energy Independence & Global Warming Hearing entitled *The Foundation of Climate Science* (May 6, 2010) available at [http://globalwarming.house.gov/pubs?id=0018#main\\_content](http://globalwarming.house.gov/pubs?id=0018#main_content).

<sup>133</sup> Intergovernmental Panel on Climate Change, 2007. The Physical Science Basis, Summary for Policymakers.

<sup>134</sup> National Oceanic and Atmospheric Administration, 2005. Impacts of Anthropogenic CO<sub>2</sub> on Ocean Chemistry and Biology Available at [http://www.oar.noaa.gov/spotlite/spot\\_gcc.html](http://www.oar.noaa.gov/spotlite/spot_gcc.html).

trial Era,<sup>135</sup> a rate of change that is at least 100 times more rapid than at any period in at least the preceding 650,000 years.<sup>136</sup>

#### GLOBAL EMISSIONS OF GREENHOUSE GASES

Of all human-emitted GHGs, CO<sub>2</sub> is most responsible for committing the world to long-term climate change. CO<sub>2</sub> accounts for approximately 77 percent of recent long-lived human-caused GHG emissions (in terms of carbon dioxide equivalents, CO<sub>2</sub>-eq, evaluated over a 100-year time horizon).<sup>137</sup> Over the past several decades, about 80 percent of human-caused CO<sub>2</sub> emissions resulted from the burning of fossil fuels, while about 20 percent resulted from deforestation and agricultural practices occurring primarily in developing countries.<sup>138</sup>

After CO<sub>2</sub>, the other primary long-lived GHGs are methane, nitrous oxide, and F-gases. Methane emissions derive primarily from agriculture, livestock, mining, transportation, use of certain fossil fuels, sewage, and landfill waste. Currently, methane accounts for approximately 14 percent of global GHG emissions (i.e., CO<sub>2</sub>-eq).<sup>139</sup> Nitrous oxide is emitted during agricultural and industrial activities as well as during combustion of fossil fuels and solid waste.<sup>140</sup> Nitrous oxide accounts for approximately 8 percent of recent global GHG emissions (CO<sub>2</sub>-eq).<sup>141</sup> F-gases are very potent GHGs that are emitted during refrigeration, air conditioning, and industrial processes. F-gases account for approximately 1 percent of recent global GHG emissions (CO<sub>2</sub>-eq).<sup>142</sup>

In addition to long-lived GHGs, tropospheric ozone and water vapor are important GHGs that are short-lived in the atmosphere. Changes in tropospheric ozone concentrations result from emissions of chemicals such as nitrogen oxides, carbon monoxide, and hydrocarbons. While the atmospheric lifetime of tropospheric ozone is relatively short compared to many other GHGs, its instantaneous warming effect is substantial, about one-fifth of the instantaneous warming associated with human-caused CO<sub>2</sub>.<sup>143</sup> Water vapor is a naturally-occurring, short-lived GHG. The amount of water vapor in the atmosphere is dependent on temperature and is not a direct result of human activities, but does respond indirectly; as the ocean and atmosphere warm from other GHGs, more evaporation occurs and the atmosphere's capacity to retain moisture also increases, thereby increasing the water vapor concentration.

Over the past two decades, growth in the world economy and its carbon intensity has driven a marked increase in GHG emissions. Between 1990 and 2004, global GHG emissions grew by 24 per-

<sup>135</sup> National Oceanic and Atmospheric Administration, (2008) available at [http://www.pmel.noaa.gov/co2/OA/Ocean\\_Acidification%20FINAL.pdf](http://www.pmel.noaa.gov/co2/OA/Ocean_Acidification%20FINAL.pdf).

<sup>136</sup> Feeley, R., et al., 2006. Carbon Dioxide and Our Ocean Legacy. Available at <http://www.pmel.noaa.gov/pubs/PDF/feel2899/feel2899.pdf>.

<sup>137</sup> Intergovernmental Panel on Climate Change, 2007. Synthesis Report.

<sup>138</sup> Karl, T., J. Melillo, and T. Peterson, (eds.), 2009. Global Climate Change Impacts in the United States, Cambridge University Press. Available at <http://www.globalchange.gov/publications/reports/scientific-assessments/us-impacts>.

<sup>139</sup> Intergovernmental Panel on Climate Change, 2007. Synthesis Report.

<sup>140</sup> Intergovernmental Panel on Climate Change, 2007. Synthesis Report.

<sup>141</sup> Intergovernmental Panel on Climate Change, 2007. Synthesis Report.

<sup>142</sup> Intergovernmental Panel on Climate Change, 2007. Synthesis Report.

<sup>143</sup> Intergovernmental Panel on Climate Change, 2007.

cent.<sup>144</sup> In 2000, the IPCC developed emissions scenarios that projected an increase of global GHG emissions of 25 to 90 percent (CO<sub>2</sub>-eq) from 2000 to 2030.<sup>145</sup> However, recent (2000–2007) trends in emissions are higher than the worst case scenario. The growth rate in emissions increased markedly from 1.3 percent per year in the 1990s to 3.3 percent per year for the period 2000–2006.<sup>146</sup> In 2007, the IPCC developed an updated set of scenarios that show similar emissions growth by 2030, but they also make clear that more rapid growth is possible.<sup>147</sup> Fossil fuel CO<sub>2</sub> emissions reached a record high in 2008 and subsequently declined slightly in 2009 by 1.3% due in part to the global economic downturn.<sup>148</sup> Under current mitigation policies, however, global GHG emissions will continue to grow over the next few decades.<sup>149</sup> By some estimates, GHG emissions from developing and emerging countries are expected to grow by 84 percent from 2000 to 2025, while GHG emissions from developed countries are expected to rise 35 percent over the same period.<sup>150</sup>

National statistics show a complex and changing environment for the sources of GHG emissions. In 2008, two-thirds of global GHG emissions originated from just ten countries, with China and the United States together responsible for 41 percent.<sup>151</sup> While China is now the largest GHG emitter on an annual basis, the United States continues to have one of the highest per capita emissions rates. As of 2008, the United States emitted 19 percent of global CO<sub>2</sub> from 5 percent of the world's population.<sup>152</sup> In contrast, China contributed 22 percent of global CO<sub>2</sub> from 20 percent of the population.<sup>153</sup> India contributed less than 5 percent of CO<sub>2</sub> from 17 percent of the population.<sup>154</sup>

For most industrialized countries, their historic (i.e., cumulative) share of global emissions is much higher than their current (i.e., annual) share. For the period between 1850 and 2005, the United States led all countries by contributing 26 percent of global cumulative CO<sub>2</sub> emissions and the EU–27 nation grouping contributed 22 percent. China's cumulative contribution was 10 percent and India's was 8 percent.<sup>155</sup> In contrast, from 2000 to 2025, China and India's emissions are expected to grow by 118 and 70 percent respectively, while emissions from the United States are expected to grow by 39 percent.<sup>156</sup> Strong new mitigation policies will be re-

<sup>144</sup> Intergovernmental Panel on Climate Change, 2007. *Mitigation of Climate Change, Summary for Policymakers*.

<sup>145</sup> United Nations Environment Programme, 2009. *Climate Change Science Compendium*.

<sup>146</sup> United Nations Environment Programme, 2009. *Climate Change Science Compendium*.

<sup>147</sup> Intergovernmental Panel on Climate Change, 2007. *Synthesis Report*.

<sup>148</sup> Global Carbon Project, 2010. Available at <http://www.globalcarbonproject.org/carbonbudget/09/hl-full.htm#ffcement>.

<sup>149</sup> United Nations Environment Programme, 2009. *Climate Change Science Compendium*.

<sup>150</sup> World Resources Institute. *Projected Emissions of GHGs in 2025*. Available at <http://cait.wri.org/figures.php?page=ntn/3-1>.

<sup>151</sup> International Energy Agency, 2010. *CO<sub>2</sub> Emissions from Fuel Combustion 2010*. Available at [http://www.iea.org/publications/free\\_new\\_Desc.asp?PUBS\\_ID=2143](http://www.iea.org/publications/free_new_Desc.asp?PUBS_ID=2143).

<sup>152</sup> International Energy Agency, 2010. *CO<sub>2</sub> Emissions from Fuel Combustion 2010*. Available at [http://www.iea.org/publications/free\\_new\\_Desc.asp?PUBS\\_ID=2143](http://www.iea.org/publications/free_new_Desc.asp?PUBS_ID=2143).

<sup>153</sup> International Energy Agency, 2010. *CO<sub>2</sub> Emissions from Fuel Combustion 2010*. Available at [http://www.iea.org/publications/free\\_new\\_Desc.asp?PUBS\\_ID=2143](http://www.iea.org/publications/free_new_Desc.asp?PUBS_ID=2143).

<sup>154</sup> International Energy Agency, 2010. *CO<sub>2</sub> Emissions from Fuel Combustion 2010*. Available at [http://www.iea.org/publications/free\\_new\\_Desc.asp?PUBS\\_ID=2143](http://www.iea.org/publications/free_new_Desc.asp?PUBS_ID=2143).

<sup>155</sup> Climate Analysis Indicators Tool (CAIT) Version 8.0. (Washington, DC: World Resources Institute, 2010).

<sup>156</sup> World Resources Institute. *Projected Emissions of GHGs in 2025*. Available at <http://cait.wri.org/figures.php?page=ntn/3-1>.

quired to prevent emissions growth consistent with these projections.

Emissions of GHGs in the United States derive from a variety of sources and have on the whole been on a growth trajectory. As of 2008, 83 percent of U.S. GHG (i.e., CO<sub>2</sub>-eq) emissions came from CO<sub>2</sub>, emitted almost entirely from energy-related fossil fuel burning. The remaining GHG emissions were comprised of CH<sub>4</sub> (11 percent of all U.S. CO<sub>2</sub>-eq emissions), N<sub>2</sub>O (4 percent), and F-gases (3 percent). U.S. energy-related CO<sub>2</sub> emissions come from the following end-use sectors: the electric power sector (41 percent), transportation sector (33 percent), and residential, commercial, and industrial sectors (26 percent).<sup>157</sup> Emissions from the electric power, transportation, and agricultural sectors have increased since 1990, while emissions from the industrial, commercial, and residential sectors have held steady or declined over the same period.

Emissions of CO<sub>2</sub> from all sources grew from 5.02 billion metric tons in 1990 to a record high of 6.03 billion metric tons in 2005.<sup>158</sup> While the long-term emissions trend has been up, year-to-year fluctuations result from a multitude of factors, including economic conditions, weather, and fuel switching in response to price changes. The recent economic downturn combined with a change in energy use—including a substantial switch from coal to natural gas and increased use of renewables for electricity generation—reduced CO<sub>2</sub> emissions in the United States during the last few years. For example, CO<sub>2</sub> emissions from fossil fuels declined 6.6 percent in 2009.<sup>159</sup> However, the current economic recovery is expected to contribute to a rise of CO<sub>2</sub> emissions of 2.1 percent and 1.1 percent for 2010 and 2011, respectively.<sup>160</sup>

#### GREENHOUSE GAS CONCENTRATIONS AND REDUCTION REQUIREMENTS

The current concentrations of GHGs in the atmosphere are unprecedented in Earth's recent history. Records over the past 800,000 years show variations in atmospheric CO<sub>2</sub> concentrations within a range of approximately 170 to 300 ppm.<sup>161</sup> Human-caused CO<sub>2</sub> emissions since the Industrial Revolution have pushed the concentration from approximately 280 parts per million (ppm) to nearly 390 ppm.<sup>162</sup> The current concentration of CO<sub>2</sub> is roughly 30 percent higher than the highest level of the past 800,000 years.<sup>163</sup> Over the same period, methane has increased from about 715 parts

<sup>157</sup> Energy Information Agency, Emissions of Greenhouse Gases Report (2009) Available at [www.eia.doe.gov/oiaf/1605/ggrpt/index.html](http://www.eia.doe.gov/oiaf/1605/ggrpt/index.html).

<sup>158</sup> Energy Information Agency, Emissions of Greenhouse Gases Report. (2009) Available at <http://www.eia.doe.gov/oiaf/1605/ggrpt/carbon.html>.

<sup>159</sup> Energy Information Agency, Short-term Energy and Summer Fuels Outlook (2010) Available at <http://www.eia.doe.gov/emeu/steo/pub/contents.html#Overview>.

<sup>160</sup> Energy Information Agency, Short-term Energy and Summer Fuels Outlook (2010) Available at <http://www.eia.doe.gov/emeu/steo/pub/contents.html#Overview>.

<sup>161</sup> Karl, T., J. Melillo, and T. Peterson, (eds.), 2009. Global Climate Change Impacts in the United States, Cambridge University Press. Available at <http://www.globalchange.gov/publications/reports/scientific-assessments/us-impacts>.

<sup>162</sup> Karl, T., J. Melillo, and T. Peterson, (eds.), 2009. Global Climate Change Impacts in the United States, Cambridge University Press. Available at <http://www.globalchange.gov/publications/reports/scientific-assessments/us-impacts>.

<sup>163</sup> Karl, T., J. Melillo, and T. Peterson, (eds.), 2009. Global Climate Change Impacts in the United States, Cambridge University Press. Available at <http://www.globalchange.gov/publications/reports/scientific-assessments/us-impacts>.

per billion (ppb) to 1774 ppb and nitrous oxide has increased from about 270 ppb to 319 ppb.<sup>164</sup>

In the absence of mitigation policies, GHG concentrations will continue on a dangerous trend. For example, CO<sub>2</sub> concentrations could increase to 2 to 3 times the highest levels from the past 800,000 years by the end of the 21st century.<sup>165</sup> The IPCC has concluded that to create even a 50–50 chance of avoiding the dangerous climate change associated with a 3.6°F increase in global average surface temperature, global GHG emissions must be reduced by 50 to 85 percent by 2050. This requires the United States and other developed countries to reduce emissions by at least 80 percent by 2050.<sup>166</sup> Given the current emissions growth both in the United States and globally, a substantial change of course is required in the very near term to avoid the catastrophic impacts outlined in later sections.

#### BLACK CARBON

Black carbon is a potent, short-lived driver of climate change. Unlike GHGs, black carbon is a particle pollutant, which is emitted as a component of soot during incomplete combustion of fossil fuels and biomass. Black carbon alters Earth's energy balance by absorbing sunlight (1) independently in the atmosphere, (2) in water droplets and ice crystals in clouds, and (3) when deposited on snow and ice surfaces.<sup>167</sup> Currently, black carbon is likely the second or third largest driver of global warming and plays a particularly large role in modifying the Arctic climate.<sup>168</sup>

Global emissions of black carbon derive from energy-related combustion and outdoor biomass burning. Of the approximately 8 million tons of black carbon released each year,<sup>169</sup> about 58 percent is emitted through energy-related combustion and 42 percent is emitted through outdoor biomass burning.<sup>170,171</sup> Residential emissions of black carbon are due largely to home heating and cooking (e.g., using wood, coal, crop residue, dung, and diesel fuel). Diesel fuel vehicles are the dominant source in the transportation sector. In the industrial sector, iron and steel production are major sources. Outdoor biomass burning is largely associated with deforestation activities and the burning of crop residue.<sup>172</sup>

Currently, global emissions of black carbon are dominated by Asia (59 percent), followed by Europe (12 percent), South America

<sup>164</sup> Intergovernmental Panel on Climate Change, 2007. Synthesis Report.

<sup>165</sup> Karl, T., J. Melillo, and T. Peterson, (eds.), 2009. *Global Climate Change Impacts in the United States*, Cambridge University Press. Available at <http://www.globalchange.gov/publications/reports/scientific-assessments/us-impacts>.

<sup>166</sup> Intergovernmental Panel on Climate Change, 2007. *Mitigation of Climate Change, Summary for Policymakers* at 38–39 (Table TS.2); and Luers, A., et al., 2007. *How to Avoid Dangerous Climate Change: A Target for U.S. Emission Reductions*. Union of Concerned Scientists. Available at [http://www.ucsusa.org/global\\_warming/solutions/big\\_picture\\_solutions/a-target-for-us-emissions.html](http://www.ucsusa.org/global_warming/solutions/big_picture_solutions/a-target-for-us-emissions.html).

<sup>167</sup> Ramanathan, V. and G. Carmichael, 2008. Global and regional climate changes due to black carbon. *Nature Geosciences*, Vol. 1.

<sup>168</sup> Jacobson, M., 2010. Short-term effects of controlling fossil-fuel soot, biofuel soot and gases, and methane on climate, Arctic ice, and air pollution health. *Journal of Geophysical Research*, Vol. 115.

<sup>169</sup> Ramanathan, V. and G. Carmichael, 2008. Global and regional climate changes due to black carbon. *Nature Geosciences*, Vol. 1.

<sup>170</sup> Bond, T., et al., 2004. A technology-based global inventory of black and organic carbon emissions from combustion. *Geophysical Research Letters*, Vol. 109.

<sup>171</sup> Bond, T. 2007. Testimony for the Hearing on Black Carbon and Climate Change, House Committee on Oversight and Government Reform. Available at <http://oversight.house.gov/images/stories/documents/20071018110647.pdf>.

(10 percent), Africa (10 percent), and North America (9 percent).<sup>173</sup> In developed countries such as the United States, energy-related combustion, primarily related to diesel fuel, is now the leading source of black carbon. Energy-related combustion also dominates emissions in Asia, though with a much larger contribution from residential sources. In contrast, outdoor burning of biomass is the leading cause of emissions in South America and Africa.

In March of 2010, the Select Committee held a hearing to explore opportunities for reducing black carbon emissions in the United States and abroad.<sup>174</sup> According to the expert testimony, there are substantial climate benefits associated with reducing black carbon emissions and the technologies to do so are already available. Residential emissions of black carbon may be reduced with cleaner cook stoves (e.g., improved-combustion, solar-powered, electric, and gas). Transportation sector emissions may be reduced through the phase out of two-stroke engines, upgrades to higher quality, low-sulfur fuels (e.g., ultra-low sulfur diesel or natural gas), improved engine technology, and engine retrofits for existing diesel vehicles. In the industrial sector, emissions may be reduced substantially by capturing particle pollution from coke ovens and blast furnaces used in steel and iron production. Changes in agricultural and forestry practices could yield large reductions from biomass burning.

Since black carbon has a short atmospheric lifetime, the benefits of emissions reductions could be achieved rapidly. However, it is very important to note that black carbon is co-emitted with other climate-modifying aerosols, including those that act as cooling agents. Still, the fast-acting nature of black carbon emission reductions could be important in preventing the climate system from passing certain tipping points of rapid and irreversible change and greatly improve human health, particularly in developing countries.<sup>175</sup>

#### OBSERVED AND PROJECTED CLIMATE CHANGE

As atmospheric GHG concentrations have increased, the global temperature has increased about 1.4 °F over the past century. The 2010 meteorological year was the hottest on record dating back to 1880.<sup>176</sup> This follows on the heels of the hottest decade (2000–2009) on record, breaking the previous record held by the 1990s, which broke the previous record of the 1980s. Additionally, every year in the 2000s was warmer than the 1990s average, and every year in the 1990s was warmer than the 1980s average.<sup>177</sup> Historical trends in the temperature record also show that the rate of warming is increasing: the rate of warming was 0.08 °F per decade for the period 1850–2005; 0.11–0.13 °F per decade for 1901–2005; and 0.29–0.31 °F per decade for 1979–2005.<sup>178</sup>

<sup>172</sup> Ramanathan, V. and G. Carmichael, 2008. Global and regional climate changes due to black carbon. *Nature Geosciences*, Vol. 1.

<sup>173</sup> Climate Institute, 2009. How does black carbon change the climate debate? *Climate Alert*, Vol. 19.

<sup>174</sup> Select Committee, 2010. *Clearing the Smoke: Understanding the Impacts of Black Carbon Pollution*. Available at [http://globalwarming.house.gov/pubs?id=0016#main\\_content](http://globalwarming.house.gov/pubs?id=0016#main_content).

<sup>175</sup> Jacobson, M., 2010. Short-term effects of controlling fossil-fuel soot, biofuel soot and gases, and methane on climate, Arctic ice, and air pollution health. *Journal of Geophysical Research*, Vol. 115.

<sup>176</sup> Kintisch, E., 2010. NASA: 2010 Meteorological Year Warmest Ever. *Science*.

<sup>177</sup> National Oceanic and Atmospheric Administration. Available at <http://www.ncdc.noaa.gov/>

Global temperatures are expected to continue to rise. Over the next two decades, global temperatures are projected to increase approximately 0.36 °F per decade for a range of emissions scenarios.<sup>179</sup> Beyond that time frame, the expected temperature rise depends largely on future emissions that will in turn depend on a variety of factors, including energy and climate policies of countries around the world. By the end of this century, if there is no change in policies, global temperatures are expected to increase in a likely range varying from 2–11.5 °F globally<sup>180</sup> and 4 to 11 °F in the United States<sup>181</sup> for a broad range of future emission scenarios. It should be emphasized, however, that current trends in emissions are consistent with, or higher than, the scenarios on the high end of this range.

The oceans have experienced both significant warming and acidification due to increases in the atmospheric concentration of GHGs. Thus far, oceans have absorbed approximately 90 percent of the excess heat trapped in the climate system because of human activities. This is due in part because ocean water has a heat capacity 1,000 times greater than that of the air in the atmosphere. Most of the warming is occurring within a few hundred feet of the sea surface; the sea surface itself has warmed about 1.4 °F over the past century.<sup>182</sup> Increasing concentrations of CO<sub>2</sub> have also acidified the world's oceans by approximately 30 percent over pre-industrial levels.<sup>183</sup> If the current CO<sub>2</sub> emissions trend continues, the ocean will experience acidification to an extent and at rates that have not occurred for tens of millions of years.

In May 2010, the Select Committee examined the fundamental climate changes occurring to Earth's atmospheric, marine, and terrestrial environments.<sup>184</sup> Dr. James Hurrell of the National Center for Atmospheric Research told the Committee that the global warming is accelerating; the rate of warming in the last 50 years is nearly twice that of the warming over the 100-year trend.<sup>185</sup> Dr. James McCarthy of Harvard University reported that scientists now know that the oceans have absorbed about one-third of the CO<sub>2</sub> released from fossil fuel burning in the Industrial Era, threatening a range of calcifying organisms and the marine ecosystems dependent on them.<sup>186</sup> The expert testimony made clear that a broad range of adverse climate change impacts are expected to intensify if human-caused GHG emissions are not curbed substantially.

<sup>179</sup> Intergovernmental Panel on Climate Change, 2007 Synthesis Report.

<sup>180</sup> Intergovernmental Panel on Climate Change, 2007 Synthesis Report.

<sup>181</sup> Karl, T., J. Melillo, and T. Peterson, (eds.), 2009. *Global Climate Change Impacts in the United States*, Cambridge University Press. Available at <http://www.globalchange.gov/publications/reports/scientific-assessments/us-impacts>.

<sup>182</sup> Intergovernmental Panel on Climate Change, 2007. Fourth Assessment Report.

<sup>183</sup> National Oceanic and Atmospheric Administration, 2008. *Ocean Acidification, State of the Science*, Available at [http://www.pmel.noaa.gov/co2/OA/Ocean\\_Acidification%20FINAL.pdf](http://www.pmel.noaa.gov/co2/OA/Ocean_Acidification%20FINAL.pdf).

<sup>184</sup> Select Committee, Hearing on *The Foundation of Climate Science* (May 6, 2010), available at [http://globalwarming.house.gov/pubs?id=0018#main\\_content](http://globalwarming.house.gov/pubs?id=0018#main_content).

<sup>185</sup> Hurrell, J., 2010. Testimony before the Select Committee on Energy Independence and Global Warming, *The Foundation of Climate Science* (May 6, 2010) available at <http://globalwarming.house.gov/files/HRG/050510climateScience/hurrell.pdf>.

<sup>186</sup> McCarthy, J., 2010. Testimony before the Select Committee on Energy Independence and Global Warming Hearing “The Foundation of Climate Science” (May 6, 2010) available at <http://globalwarming.house.gov/files/HRG/050510climateScience/mcCarthy.pdf>.



## CLIMATE CHANGE IMPACTS

The warming of the climate system produces many complex responses, which then lead to a range of impacts on human and natural systems. It bears emphasis that the observed warming and ocean acidification to date has already produced many documented climatic changes. As warming and acidification continue, more dramatic changes are expected. Here, we discuss some examples of climate change impacts.

*Ice in the Arctic*

The Arctic region is warming at a staggering rate. By the decade of the 2000s, much of the Arctic warmed by 1.8–3.6 °F relative to the period 1951 to 1980, a level of warming that exceeded most other regions on Earth. Since 1950, northern Greenland has experienced warming of 2.7–3.6 °F.<sup>187</sup> The amplified climate response in the Arctic is thought to be due in large part to the melting of Arctic ice.<sup>188</sup> Ice acts like a mirror to the sun's energy, reflecting much of the energy back out into space. As Arctic ice disappears, dark ocean water and land is revealed, which soaks up more sunlight and heat and thereby accelerates warming and melting.

As temperatures rise in the Arctic, sea ice is disappearing. The Arctic sea ice extents in the last four years (2007 to 2010) have been the four lowest on record.<sup>189</sup> In 2010, the extent of ice in the Arctic was the third-lowest recorded since observations began in 1979<sup>190</sup> and the area of missing ice compared to the baseline period of 1979–2000 was nearly five times the size of California.<sup>191</sup> The amount of multi-year ice has been in decline, as has the thickness of ice. From submarine measurements, researchers have observed an average loss of nearly two meters of Arctic sea ice between 1980 and 2008, almost half of the average ice thickness.<sup>192</sup>

Leading models predict that Arctic summer sea ice may completely disappear within the next 30 years and possibly as early as the 2020s, though the precise timing is uncertain.<sup>193</sup> A recent international assessment projects that the polar bear population will decline by more than 30 percent in 45 years due to reduced habitat range and quality.<sup>194</sup> The loss of stable, year-round sea ice is also disrupting traditional seal-hunting and fishing practices on which Inuit livelihoods depend, endangering an entire way of life.

The ice covering Arctic land areas is also melting and contributing to global sea level rise. In Greenland, for example, around 385 cubic miles of ice was lost between April 2002 and February 2009, equivalent to a half millimeter per year of global sea level

<sup>187</sup>National Aeronautic and Space Administration. Available at <http://data.giss.nasa.gov/gistemp/graphs/Greenland.pdf>.

<sup>188</sup>Arctic Council and the International Arctic Science Committee, 2004. Arctic Climate Impact Assessment. Available at <http://www.acia.uaf.edu/>.

<sup>189</sup>National Snow and Ice Data Center. Available at <http://nsidc.org/arcticseaicenews/>.

<sup>190</sup>National Snow and Ice Data Center. Available at <http://nsidc.org/arcticseaicenews/>.

<sup>191</sup>National Snow and Ice Data Center. Available at <http://nsidc.org/arcticseaicenews/>.

<sup>192</sup>Copenhagen Diagnosis (2009) Available at [http://www.ccrcc.unsw.edu.au/Copenhagen/Copenhagen\\_Diagnosis\\_LOW.pdf](http://www.ccrcc.unsw.edu.au/Copenhagen/Copenhagen_Diagnosis_LOW.pdf).

<sup>193</sup>National Oceanic and Atmospheric Administration. Available at [http://www.arctic.noaa.gov/future/sea\\_ice.html](http://www.arctic.noaa.gov/future/sea_ice.html).

<sup>194</sup>International Union for Conservation of Nature and Natural Resources, 2010. Ursus Maritimus. Available at <http://www.iucnredlist.org/apps/redlist/details/22823/0>.

rise.<sup>195</sup> Further, the rate of ice loss from Greenland has been accelerating,<sup>196</sup> meaning the contribution to global sea level will continue to grow with time.

Melt-water from Arctic land areas may alter ocean currents, potentially disturbing marine ecosystems and weather patterns. As the Arctic permafrost (frozen soil) melts, massive amounts of methane may be released as the carbon-rich soils are exposed to microbial degradation. Since methane is a potent GHG, these emissions will produce a positive feedback that will drive additional warming and subsequent methane emissions.<sup>197</sup> At predicted rates of thaw, it is expected that methane emissions from melting permafrost will contribute an additional 20 to 40 percent to all global methane emissions (natural and manmade) by 2100 and thereby contribute a projected +0.58 °F to global temperatures.<sup>198</sup> The loss of permafrost is also causing extensive damage to homes and other infrastructure in Inuit villages.

The Select Committee held a briefing in August of 2010 to examine the calving of a massive iceberg from Greenland and the broader pattern of ice loss in the Arctic.<sup>199</sup> In early August 2010, an iceberg covering nearly 100 square miles—four times the size of Manhattan—broke off (calved) from the Petermann Glacier on the northwestern coast of Greenland.<sup>200</sup> The iceberg was the largest to break off in the Arctic in nearly a half century. Dr. Robert Bindshadler and Dr. Richard Alley, two of the scientists participating in the briefing, warned Select Committee members that we could have already passed, or may within only decades pass, a tipping point in the Arctic beyond which climate change may be even more abrupt and effectively irreversible.<sup>201</sup>

### *Ice in Antarctica*

Antarctica is also losing ice with consequences ranging from increased global sea level to loss of wildlife habitat. Antarctica is covered by two ice sheets; the larger East Antarctic ice sheet covers the majority of the continent, while the West Antarctic ice sheet has significant ice shelves floating in the ocean. Taken together, they contain enough water to raise sea level by around 200 feet if melted completely.<sup>202</sup>

In the spring of 2002, scientists were shocked to discover that an ice shelf the size of Rhode Island had disintegrated in just over a month from the West Antarctica ice sheet. The collapse of the Larsen B ice shelf was a wake up call to scientists who had

<sup>195</sup> University of Colorado at Boulder, (2010) Available at <http://www.colorado.edu/news/r/f595fae00e6b451d4016ab9a43a049f8.html>.

<sup>196</sup> Kahn, S., et al., 2010. Spread of ice mass loss into northwest Greenland observed by GRACE and GPS. *Geophysical Research Letters*, Vol. 37.; and Velicogna, I. (2009). Increasing rates of ice mass loss from the Greenland and Antarctic ice sheets revealed by GRACE. *Geophysical Research Letters*, Vol. 36.

<sup>197</sup> Anthony, K., 2009. Methane: A menace surfaces. *Scientific American*.

<sup>198</sup> Anthony, K., 2009. Methane: A menace surfaces. *Scientific American*.

<sup>199</sup> Select Committee hearing on *The Greenland Ice Sheet: Global Warming's Impacts on the Arctic Region* (August 10, 2010) available at [http://globalwarming.house.gov/pubs?id=0020#main\\_content](http://globalwarming.house.gov/pubs?id=0020#main_content).

<sup>200</sup> National Aeronautics and Space Administration, 2010. Ice Island Calves off Petermann Glacier. Available at <http://www.nasa.gov/topics/earth/features/petermann-calve.html>.

<sup>201</sup> Select Committee Briefing, 2010. The Greenland Ice Sheet: Global Warming's Impacts on the Arctic Region. Available at [http://globalwarming.house.gov/pubs?id=0020#main\\_content](http://globalwarming.house.gov/pubs?id=0020#main_content).

<sup>202</sup> National Aeronautics and Space Administration, 2010. Is Antarctica Melting? Available at [http://www.nasa.gov/topics/earth/features/20100108\\_Is\\_Antarctica\\_Melting.html](http://www.nasa.gov/topics/earth/features/20100108_Is_Antarctica_Melting.html).

thought that these large areas of ice would take a millennium to disappear, not a month.<sup>203</sup>

Since then, satellite measurements made by NASA show that Antarctica as a whole is indeed losing mass at an accelerating rate. There is also evidence that in addition to the loss known to be occurring in the western ice sheet, East Antarctica has also been losing ice since 2006.<sup>204</sup>

Human activities have been identified as an important driver of Antarctic climate change, though a complex set of natural factors are also important.<sup>205</sup> Rigorous analysis of temperature trends show that Antarctica has been warming at an average rate of 0.22 °F per decade (from 1957 to 2006) or more than 1 °F for the last half century,<sup>206</sup> roughly comparable to the warming observed for the globe as a whole.<sup>207</sup> Antarctic warming is expected to continue as GHG concentrations rise and the ozone hole, which cools the continent, heals.

As ice extent shrinks, breeding and foraging habitat for Antarctic wildlife is compromised. The population of Emperor penguins, for example, has already declined by 50 percent.<sup>208</sup> Researchers studying Emperor penguins in Terre Adélie, Antarctica, estimate that by the end of the century their population will decline from 6,000 breeding pairs to an expected 400 breeding pairs under IPCC climate projections of business-as-usual emissions of GHGs.<sup>209</sup>

### *Sea Level Rise*

Accelerating sea level rise is threatening coastal communities around the world. Over the past century, thermal expansion of the oceans and widespread melting of ice sheets and glaciers have produced a global sea level rise of approximately 8 inches.<sup>210</sup> Observations from the past two decades indicate that the recent rate of rise has been twice that of the past century.<sup>211</sup> Over the next century, the IPCC has projected global sea level rise of 7 to 23 inches (18–59 centimeters), with current emissions trends consistent with the higher end of the range. However, these estimates do not account for changes in ice sheet dynamics.<sup>212</sup> Accounting for this contribu-

<sup>203</sup> National Aeronautics and Space Administration, 2002. Breakup of the Larsen Ice Shelf, Antarctica. Available at <http://earthobservatory.nasa.gov/IOTD/view.php?id=2288>.

<sup>204</sup> Chen, J., et al., 2009. Accelerated Antarctic ice loss from satellite gravity measurements. *Nature*, Vol. 2.

<sup>205</sup> Gillett, N., et al., 2008. Attribution of polar warming to human influence. *Nature*, Vol. 1.

<sup>206</sup> Steig, E., *Warming of the Antarctic ice-sheet surface since the 1957 International Geophysical Year*, *Nature* 457; and National Aeronautics and Space Administration, 2009. *Satellites Confirm Half-Century of West Antarctic Warming*. Available at [http://www.nasa.gov/topics/earth/features/warming\\_antarctica.html](http://www.nasa.gov/topics/earth/features/warming_antarctica.html); Real Climate, 2009. *State of Antarctica: red or blue?* Available at <http://www.realclimate.org/index.php/archives/2009/01/state-of-antarctica-red-or-blue/>.

<sup>207</sup> National Aeronautics and Space Administration. GISS Surface Temperature Analysis, available at <http://data.giss.nasa.gov/gistemp/graphs/>

<sup>208</sup> Barbraud, C., and H. Weimerskirch, 2001. Emperor penguins and climate change. *Nature* 411.

<sup>209</sup> Jenouvrier, S., et al., 2009. Demographic models and IPCC climate projections predict the decline of an emperor penguin population. *Proceedings of the National Academy of Sciences*. Vol. 106.

<sup>210</sup> Karl, T., J. Melillo, and T. Peterson, (eds.), 2009. *Global Climate Change Impacts in the United States*, Cambridge University Press. Available at <http://www.globalchange.gov/publications/reports/scientific-assessments/us-impacts>.

<sup>211</sup> Intergovernmental Panel on Climate Change, 2007. *Adaptation North America*. Available at <http://www.ipcc.ch/pdf/assessment-report/ar4/wg2/ar4-wg2-chapter14.pdf>.

<sup>212</sup> Intergovernmental Panel on Climate Change, 2007.

tion, the rise is expected to be in the range of 3.5 feet by the end of this century, perhaps even as great as 6.5 feet.<sup>213</sup>

Sea level rise will have severe impacts on the world's coastal regions. Rising sea levels are already causing inundation of low-lying lands and infrastructure, erosion of wetlands and beaches, exacerbation of storm surges and flooding, and increases in the salinity of coastal estuaries and aquifers. The most dramatic near-term threats of sea level rise are being felt by small island states with elevations close to current sea level. Worldwide, about one billion people live within 75 feet elevation of today's sea level, including nearly all of Bangladesh, and areas occupied by more than 250 million people in China.<sup>214</sup> In total, more than 70 percent of the world's population lives on coastal plains, and 11 of the world's 15 largest cities are on the coast.

The coastal regions of the United States are very susceptible to sea level rise. Along the Gulf Coast, an estimated 2,400 miles of major roadway and 246 miles of freight lines are at risk of permanent flooding for a 4 foot rise.<sup>215</sup> The Transportation Research Board concluded that under business-as-usual, coastal airport runways in Boston, Miami, New York and other areas could be under water by 2050. In addition, rising sea level will cause intrusion of saltwater into both surface water and ground water in many U.S. coastal areas, threatening freshwater supplies.<sup>216</sup>

#### *Warming and Acidification of the World's Oceans*

The world's oceans will suffer devastating climate change impacts. The U.N. Environment Programme found that "climate change may slow down ocean thermohaline circulation crucial to coastal water quality and nutrient cycling in more than 75 percent of the world's fishing grounds."<sup>217</sup> Less hospitable waters would have a significant effect on the fishing industries. In the United States alone, commercial and recreational fisheries contribute \$60 billion to the economy each year and employ more than 500,000 people.<sup>218</sup>

Warming and acidification of ocean waters are also contributing to the collapse of coral reefs around the globe. Recent studies indicate that over one-third of all coral species are already endangered.<sup>219</sup> When key temperature thresholds are exceeded, mass bleaching and complete coral mortality often result. In fact, corals are threatened to extinction within the next century from rising ocean temperatures and ocean acidification if atmospheric CO<sub>2</sub> concentrations continue to rise unchecked. This threatens U.S. reefs with commercial value exceeding \$100 million. The total global eco-

<sup>213</sup> Karl, T., J. Melillo, and T. Peterson, (eds.), 2009. Global Climate Change Impacts in the United States, Cambridge University Press. Available at <http://www.globalchange.gov/publications/reports/scientific-assessments/us-impacts>.

<sup>214</sup> Intergovernmental Panel on Climate Change, 2007: The Physical Science Basis, Summary for Policymakers.

<sup>215</sup> Karl, T., J. Melillo, and T. Peterson, (eds.), 2009. Global Climate Change Impacts in the United States, Cambridge University Press. Available at <http://www.globalchange.gov/publications/reports/scientific-assessments/us-impacts>.

<sup>216</sup> Environmental Protection Agency. Coastal Zones and Sea Level Rise, Available at <http://www.epa.gov/climatechange/effects/coastal/index.html>.

<sup>217</sup> United Nations Environmental Programme, 2008. Warmer World May Mean Less Fish. Available at <http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=528&ArticleID=575>.

<sup>218</sup> Connaughton, J., 2005. Testimony to Senate Commerce Committee.

<sup>219</sup> Carpenter K., et al., 2008. One-Third of Reef-Building Corals Face Elevated Extinction Risk from Climate Change and Local Impacts, Science Express.

conomic value of coral is estimated to be between \$30 and \$172 billion annually. In the United States, certain coastal areas would be especially harmed; in Florida, for example, reef-based tourism in the Florida Keys generates \$1.2 billion in annual revenue.<sup>220</sup> Healthy coral reefs provide other benefits as well, including shoreline protection, beach sand supply, potential pharmaceuticals, and habitat for fish and other marine organisms.

### *Extreme Events*

Global warming has already changed the intensity, duration, frequency, and geographic range of a variety of weather patterns and will continue to do so, with potentially severe impacts on the United States and the world.<sup>221</sup>

A 2009 study by researchers at the National Center for Atmospheric Research (NCAR) shows that the United States experienced approximately twice as many daily record high temperatures than daily record lows over the past decade, as the number of daily record lows has diminished due to global warming.<sup>222</sup> Since the 1980s, the frequency of damaging extreme weather events and the cumulative cost of those storms has increased in the United States; in recent years, the number of weather events exceeding \$1 billion in damages exceeded 100.<sup>223</sup>

Heat waves have already increased in frequency over most land areas, and it is very likely that future climate change will result in an increase in the frequency and intensity of hot extremes.<sup>224,225</sup> The intensity, duration and frequency of heat waves will increase particularly in western and southern regions of the United States.<sup>226</sup> For a high GHG emissions future, parts of the U.S. South that currently have about 60 days per year with temperatures exceeding 90 °F will experience more than 150 such days by the end of the century.<sup>227</sup> With continued warming by 2100, Washington, D.C. will experience the temperatures that Houston does today, Denver will be as warm as Memphis is today, and Anchorage will be as warm as New York City is today.<sup>228</sup> A warmer planet is also expected to experience more extreme summer dryness.<sup>229</sup>

<sup>220</sup> Damassa, T., 2006. World Resources Institute, The Value of Ecosystems. Available at <http://www.wri.org/stories/2006/12/value-coastal-ecosystems>.

<sup>221</sup> Intergovernmental Panel on Climate Change, 2007. The Physical Science Basis at 8; and U.S. Climate Change Science Program, Synthesis, 2008. Assessment Product 3.3, Weather and Climate Extremes in a Changing Climate: Regions of Focus: North America, Hawaii, Caribbean, and U.S. Pacific Islands.

<sup>222</sup> University Corporation for Atmospheric Research. Available at <http://www.ucar.edu/news/releases/2009/maxmin.jsp>.

<sup>223</sup> National Oceanic and Atmospheric Administration. Billion Dollar U.S. Weather Disasters. Available at <http://www.ncdc.noaa.gov/oa/reports/billionz.html>.

<sup>224</sup> Intergovernmental Panel on Climate Change, 2007. Synthesis Report, Summary for Policymakers.

<sup>225</sup> Karl, T., J. Melillo, and T. Peterson, (eds.), 2009. Global Climate Change Impacts in the United States, Cambridge University Press. Available at <http://www.globalchange.gov/publications/reports/scientific-assessments/us-impacts>.

<sup>226</sup> Meehl, G. and C. Tebaldi, 2004. More Intense, More Frequent, and Longer Lasting Heat Waves in the 21st Century, 305 Science 994.

<sup>227</sup> Karl, T., J. Melillo, and T. Peterson, (eds.), 2009. Global Climate Change Impacts in the United States, Cambridge University Press. Available at <http://www.globalchange.gov/publications/reports/scientific-assessments/us-impacts>.

<sup>228</sup> Ackerman, F., and E. Stanton. The Cost of Climate Change: What We'll Pay if Global Warming Continues Unchecked. Natural Resources Defense Council. (2008) Available at <http://www.nrdc.org/globalwarming/cost/cost.pdf>.

<sup>229</sup> Karl, T., J. Melillo, and T. Peterson, (eds.), 2009. Global Climate Change Impacts in the United States, Cambridge University Press. Available at <http://www.globalchange.gov/publications/reports/scientific-assessments/us-impacts>.

With global warming, heavy winter precipitation and flooding is also increasing.<sup>230</sup> In the United States, for example, the amount of precipitation falling in heavy downpours (heaviest 1 percent of events) has increased nearly 20 percent over the past century.<sup>231</sup> As the atmosphere warms, it is able to hold more water vapor. When a storm occurs, the amount of precipitation can increase, which can result in flooding. The IPCC has found that “[t]he frequency of heavy precipitation events has increased over most land areas, consistent with warming and observed increases of atmospheric water vapor.”<sup>232</sup> Precipitation is expected to continue to shift towards heavier events, with longer dry periods in between.<sup>233</sup> Contrary to the claims of global warming skeptics, the record snowstorms during the winter of 2009–2010 may have demonstrated this phenomenon; they certainly did not disprove it. In the future, it is very likely that North America will experience more frequent and intense heavy downpours and higher levels of total rainfall in extreme precipitation events. Extreme precipitation events and associated flooding costs lives and result in damage to infrastructure, property, and agricultural lands.

Global warming is expected to increase the globally averaged intensity of tropical storms and decrease their frequency.<sup>234</sup> Stronger hurricanes lead to more destructive winds and higher storm surges, increasing the risk to coastal communities in their paths. As sea level rises and storm surges increase, the vulnerability of cities to flooding, and the related impacts, increases significantly. Finally, strong cold-season storms are also likely to become more frequent, with stronger winds and more extreme wave heights.<sup>235</sup>

In September of 2010, the Select Committee held a briefing to examine the links between climate change and extreme weather events. Pakistan’s Ambassador to the United States Husain Haqqani spoke about the devastating economic, health, and security impacts of the flooding that struck Pakistan in the summer of 2010.<sup>236</sup> Twenty percent of Pakistan was inundated, more than 1,700 people lost their lives, and more than 21 million people were directly affected by the floods.

Extreme events consistent with climate change predictions occurred in a number of other locations in 2010 as well. Russia experienced both the worst heat wave and one of the worst droughts on record. In China, massive flooding claimed over 2,000 lives. In India, heat waves killed dozens of people and flooding left 2 million people homeless. Here in the United States, record-breaking temperatures baked the East Coast and disastrous flooding inundated Arkansas, Iowa, Oklahoma, Tennessee, and elsewhere. As the par-

<sup>230</sup> Karl, T., J. Melillo, and T. Peterson, (eds.), 2009. *Global Climate Change Impacts in the United States*, Cambridge University Press. Available at <http://www.globalchange.gov/publications/reports/scientific-assessments/us-impacts>.

<sup>231</sup> Karl, T., J. Melillo, and T. Peterson, (eds.), 2009. *Global Climate Change Impacts in the United States*, Cambridge University Press. Available at <http://www.globalchange.gov/publications/reports/scientific-assessments/us-impacts>.

<sup>232</sup> Intergovernmental Panel on Climate Change, 2007. *The Physical Science Basis, Summary for Policymakers*.

<sup>233</sup> Intergovernmental Panel on Climate Change, 2007. *The Physical Science Basis, Summary for Policymakers*.

<sup>234</sup> Knutson, T., et al., 2010. Tropical cyclones and climate change. *Nature Geoscience* 3, 157–163.

<sup>235</sup> U.S. Climate Change Science Program, 2008. *Weather and Climate Extremes in a Changing Climate: Regions of Focus: North America, Hawaii, Caribbean, and U.S. Pacific Islands*.

<sup>236</sup> Select Committee, Hearing on *Extreme Weather in a Warming World* (September 23, 2010) Available at <http://globalwarming.house.gov/pubs?id=0023>.

ticipants of the briefing discussed, as concentrations of GHGs increase in the atmosphere, there will be more extreme weather events, including more intense and frequent heat waves and increased drought and flooding.<sup>237</sup>

### *Freshwater*

One of the most dramatic impacts of global warming in the 21st century will be the exacerbation of already severe water scarcity. Over a billion people currently lack access to safe drinking water.<sup>238</sup> By 2025, 1.8 billion people are expected to be living in regions experiencing water scarcity and two-thirds of the world's population may be living in water stressed conditions.<sup>239</sup> The IPCC projects that by 2020, between 75 and 250 million people in Africa will experience an increase of water stress due to climate change.<sup>240</sup> For Asia, the number is between 120 million and 1.2 billion people, and for Latin American it is 12 to 81 million.<sup>241</sup>

Global warming is leading to rapid melting of land ice, glaciers, ice caps, and snow fields which over time will exacerbate water scarcity in many regions of the globe. One-sixth of the world population currently relies on melt-water from glaciers and snow cover for drinking water and irrigation.<sup>242</sup> The IPCC's 2008 *Climate Change and Water* report projects widespread reductions in snow cover in the 21st Century, and a 60 percent volume loss in glaciers in various regions.<sup>243</sup> While melting may temporarily increase freshwater supply, more winter precipitation falling as rain rather than snow and an earlier snowmelt season will deplete frozen freshwater reserves and exacerbate water scarcity conditions.<sup>244</sup>

Increased water stress due to climate change will disproportionately affect the dry tropics and dry regions at lower mid-latitudes.<sup>245</sup> Semi-arid and arid areas in Southeast Asia, Southern Africa, Brazil, and the western United States are expected to suffer decreasing water resources with climate change.<sup>246</sup> In Asia, decreasing precipitation and rising temperatures will result in the increasing frequency and intensity of droughts.<sup>247</sup> In northwestern China and Mongolia, snow and glacier melt will cause floods in the spring in the near term but will also result in freshwater shortages by the end of the century.<sup>248</sup> Global warming is expected to result in more persistent El Niño conditions that shift the Amazon rainforest from a tropical forest environment towards dry savan-

<sup>237</sup> Select Committee, Hearing on *Extreme Weather in a Warming World* (September 23, 2010) Available at <http://globalwarming.house.gov/pubs?id=0023>.

<sup>238</sup> German Advisory Council on Global Change, 2007. *Climate Change as a Security Risk Summary for Policy-makers*.

<sup>239</sup> United Nations Commission on Sustainable Development, 2008. *The Food Crisis and Sustainable Development*. Available at [http://www.un.org/esa/sustdev/csd/csd16/documents/bgrounder\\_foodcrisis.pdf](http://www.un.org/esa/sustdev/csd/csd16/documents/bgrounder_foodcrisis.pdf).

<sup>240</sup> Intergovernmental Panel on Climate Change, 2007: *Impacts, Adaptation and Vulnerability, Summary for Policy Makers* at 13.

<sup>241</sup> Intergovernmental Panel on Climate Change, 2008. *Climate Change and Water*, pp. 36.

<sup>242</sup> Intergovernmental Panel on Climate Change, 2007. *Impacts, Adaptation, and Vulnerability, Summary for Policymakers* at 11.

<sup>243</sup> Intergovernmental Panel on Climate Change, 2008. *Climate Change and Water*, pp. 28.

<sup>244</sup> Intergovernmental Panel on Climate Change, 2008. *Climate Change and Water*, pp. 19–26.

<sup>245</sup> Intergovernmental Panel on Climate Change, 2008. *Climate Change and Water*, pp. 3.

<sup>246</sup> Intergovernmental Panel on Climate Change, 2008. *Climate Change and Water*, pp. 88.

<sup>247</sup> Intergovernmental Panel on Climate Change, 2008. *Climate Change and Water*, pp. 86.

<sup>248</sup> Intergovernmental Panel on Climate Change, 2008. *Climate Change and Water*, pp. 87.

nah,<sup>249</sup> imperiling an ecosystem that sustains local communities and one of the highest concentrations of biodiversity on Earth.<sup>250</sup> In the American West, the Sierra Nevada snowpack is at its lowest level in 20 years, threatening California water supplies.<sup>251</sup> Experts warn that even in optimistic scenarios for the second half of the 21st century, 30 to 70 percent of this snowpack may disappear.<sup>252</sup> As a consequence of decreasing snowmelt in the Rocky Mountains, the U.S. Southwest is already experiencing a severely reduced flow in the Colorado River upon which 30 million people depend for water.<sup>253</sup> The U.S. Midwest is expected to experience drought due to a loss of soil moisture and surface waters.<sup>254</sup> In addition to a range of other costs, agriculture in the U.S. Southwest and Great Plains is likely to suffer massive economic losses due to increasing water scarcity.<sup>255</sup> In September 2010, Dr. Michael Wehner of Lawrence Berkeley National Laboratory briefed the Select Committee on the hydrologic impacts of climate change, explaining that much of the United States will experience severe drought by the end of the 21st century for business-as-usual GHG emissions.<sup>256</sup>

Climate change will also negatively impact the quality of freshwater resources. For example, reduced river flows will limit the dilution of effluent, leading to increased pathogen and chemical concentrations.<sup>257</sup> In addition, increased heavy precipitation events due to climate change may contaminate watercourses and drinking-water reservoirs.<sup>258</sup> Warmer water temperature combined with higher phosphorus concentrations will increase the occurrence of freshwater algal blooms, with adverse impacts on freshwater ecosystems and fisheries. Fish habitat may also be compromised because altered water chemistry will promote the intrusion of invasive species.<sup>259</sup> These impacts will exacerbate the precarious state of freshwater fish species in North America, nearly 40 percent of which are already at risk.<sup>260</sup>

### *Land Resources*

Global warming is impacting forests through increased temperatures, altered patterns of precipitation, and changes in the presence and severity of pests. The role of climate change in forest ecol-

<sup>249</sup> Lenton, T., et al., 2008. Tipping Elements in the Earth's climate system. 105 Proceedings of the National Academy of Sciences 1790.

<sup>250</sup> WWF Climate Change Programme. Climate Change Impacts in the Amazon: Review of Scientific Literature. Available at [http://assets.panda.org/downloads/amazon\\_cc\\_impacts\\_lit\\_review\\_final\\_2.pdf](http://assets.panda.org/downloads/amazon_cc_impacts_lit_review_final_2.pdf).

<sup>251</sup> Gertner, J., 2008. The Future is Drying Up, New York Times. Available at [http://www.nytimes.com/2007/10/21/magazine/21water-t.html?\\_r=1&ref=todayspaper&oref=slogin](http://www.nytimes.com/2007/10/21/magazine/21water-t.html?_r=1&ref=todayspaper&oref=slogin).

<sup>252</sup> Gertner, J., 2008. The Future is Drying Up, New York Times. Available at [http://www.nytimes.com/2007/10/21/magazine/21water-t.html?\\_r=1&ref=todayspaper&oref=slogin](http://www.nytimes.com/2007/10/21/magazine/21water-t.html?_r=1&ref=todayspaper&oref=slogin).

<sup>253</sup> Gertner, J., 2008. The Future is Drying Up, New York Times. Available at [http://www.nytimes.com/2007/10/21/magazine/21water-t.html?\\_r=1&ref=todayspaper&oref=slogin](http://www.nytimes.com/2007/10/21/magazine/21water-t.html?_r=1&ref=todayspaper&oref=slogin).

<sup>254</sup> Gertner, J., 2008. The Future is Drying Up, New York Times. Available at [http://www.nytimes.com/2007/10/21/magazine/21water-t.html?\\_r=1&ref=todayspaper&oref=slogin](http://www.nytimes.com/2007/10/21/magazine/21water-t.html?_r=1&ref=todayspaper&oref=slogin).

<sup>255</sup> Ruth, M., et al., 2007. The US Economic Impacts of Climate Change and the Costs of Inaction. University of Maryland Center for Integrative Environmental Research. Available at [http://dl.klima2008.net/ccsl/us\\_economic.pdf](http://dl.klima2008.net/ccsl/us_economic.pdf).

<sup>256</sup> Wehner, M., Testimony before the Select Committee on Energy Independence and Global Warming. Hearing on *Extreme Weather and Climate in a Changing World*. (September 23, 2010) Available at <http://globalwarming.house.gov/files/HRG/092310ExtremeWeather/wehner.pdf>.

<sup>257</sup> Intergovernmental Panel on Climate Change, 2008. Climate Change and Water, pp. 67.

<sup>258</sup> Intergovernmental Panel on Climate Change, 2008. Climate Change and Water, pp. 68.

<sup>259</sup> Environmental Protection Agency, 2008. National Water Program Strategy: Response to Climate Change. Available at [http://www.epa.gov/water/climatechange/docs/TO5\\_DRAFT\\_CCR\\_Revised\\_10-16.pdf](http://www.epa.gov/water/climatechange/docs/TO5_DRAFT_CCR_Revised_10-16.pdf).

<sup>260</sup> Winter, A., 2008. Fisheries: Freshwater species in steep decline—USGS, Greenwire.



ogy is an area of active scientific research. In areas with adequate water availability, warmer temperatures have likely increased forest growth and will continue to do so. Increasing CO<sub>2</sub> concentrations will likely increase photosynthesis but will only increase wood production in young forests where adequate nutrients and water are available.

But the negative effects of climate change on forests outweigh the benefits. Increasing global temperatures are already affecting tropical forests, with droughts provoking forest fires in the Amazon and Indonesia. The combination of degraded forests from logging and agriculture with more extreme climate events suggests that forest fires are likely to play an even more important role in the future of tropical forests and their contribution of global warming pollution.<sup>261</sup> The dieback of forests represents a form of abrupt climate change, as forests that would otherwise serve as carbon sinks may succumb to water stress and pest exposure; the risk of passing such critical thresholds increases greatly with continued climate change.<sup>262</sup>

In the United States, some forest types are expected to expand (e.g., oak-hickory), while others are expected to contract (e.g., maple-beech-birch).<sup>263</sup> There is also growing evidence that climate change is increasing the frequency and intensity of wildfires in the United States. Scientists have concluded that from 1986 to 2006 longer, warmer summers have resulted in a four-fold increase in major wildfires and a six-fold increase in the area of forest burned, compared to the period from 1970 to 1986.<sup>264</sup> In addition to more intense and more frequent fires, the length of the fire season and the burn duration of large fires have also increased. Warmer temperatures cause an earlier snowmelt which can lead to an earlier and longer dry season.<sup>265</sup> Models of future climate have consistently concluded that the area burned will increase in the coming years and decades. With more wildfires come more GHG emissions. Although estimates vary widely, wildfires may represent up to 10 percent of total U.S. GHG emissions.<sup>266</sup>

Global warming is also exacerbating insect infestations (most notably bark beetles), which in turn make forests more susceptible to wildfire. Drought stress makes trees and vegetation more susceptible to attack by insects, and warmer winter temperatures allow a higher number of insects to survive and increase their populations. Warmer temperatures can also increase reproductive rates of insects, resulting in two generations in a single year. Finally, warmer temperatures allow insects to invade areas previously outside their natural range, as has happened with the mountain pine beetle in the U.S. West. Research has clearly demonstrated the link

<sup>261</sup> Alencar, A., et al., Carbon emissions associated with forest fires in Brazil, in *Tropical Deforestation and Climate Change* (P. Moutinho and S. Schwartzman eds. 2005). Available at [http://www.edf.org/documents/4930\\_TropicalDeforestation\\_and\\_ClimateChange.pdf](http://www.edf.org/documents/4930_TropicalDeforestation_and_ClimateChange.pdf).

<sup>262</sup> Copenhagen Diagnosis, 2009. <http://www.copenhagendiagnosis.org/>.

<sup>263</sup> Karl, T., J. Melillo, and T. Peterson, (eds.), 2009. *Global Climate Change Impacts in the United States*, Cambridge University Press. Available at <http://www.globalchange.gov/publications/reports/scientific-assessments/us-impacts>.

<sup>264</sup> Westerling, A., et al., Warming and Earlier Spring Increase Western U.S. Forest Wildfire Activity 313 *Science* 940 (2006).

<sup>265</sup> Westerling, A., et al., Warming and Earlier Spring Increase Western U.S. Forest Wildfire Activity 313 *Science* 940 (2006).

<sup>266</sup> Van der Werf, G., et al., Continental-Scale Partitioning of Fire Emissions During the 1997 to 2001 El Niño/La Niña Period, 303, *Science* 73. (2004).

between warmer temperatures and drought on extensive insect outbreaks in southwestern forests and Alaska.<sup>267</sup>

Agricultural lands are also expected to experience substantial impacts from climate change. For most crops there are temperature limits that, when reached, can impair crop yield. For example, an anticipated 2.2 °F rise in temperatures over the next 30 years is projected to decrease yields of maize by 4.0 percent, wheat by 6.7 percent, sorghum by 9.4 percent and dry bean yields by 8.6 percent.<sup>268</sup> Agricultural lands are also sensitive to changes in the timing and intensity of water availability. Runoff in snowmelt-dominated areas is occurring up to 20 days earlier in the U.S. West and up to 14 days earlier in the Northeast.<sup>269</sup> In some regions, global warming is expected to exacerbate drought conditions, whereas others will experience more frequent and intense heavy downpours. Heavy rainfalls reduced the value of the U.S. corn crop by an average of \$3 billion per year between 1951 and 1998.<sup>270</sup> Insects and disease pests will also respond to changes in climate and may adversely affect agriculture.<sup>271</sup>

### *Wildlife*

If climate change goes unchecked, it could lead to mass extinction of the world's species. The International Union for the Conservation of Nature's 2008 annual report lists 38 percent of catalogued species as already threatened with extinction, including nearly 25 percent of all mammals.<sup>272</sup> A 2004 study suggests that 15 to 37 percent of terrestrial species may be "committed to extinction" by 2050 due to climate change.<sup>273</sup> The IPCC predicts that for a temperature rise of 2.7–4.5 °F, approximately 20 to 30 percent of plant and animal species will be at an increased risk of extinction.<sup>274</sup> Additional warming could lead to even higher rates of extinction, perhaps a loss of more than 40 percent of all plant and animal species by the latter half of this century.<sup>275</sup>

The species most vulnerable to climate change have a specialized habitat, a narrow environmental tolerance that is likely to be exceeded due to climate change, and dependence on specific environmental triggers or interactions that are likely to be disrupted by climate change. One tragic and iconic example is the polar bear. Polar bear populations are expected to decline by 30 percent in the

<sup>267</sup> Backlund, P. et al., U.S. Climate Change Science Program, 2008. The Effects of Climate Change on Agriculture, Land Resources, Water Resources, and Biodiversity in the United States at 7.

<sup>268</sup> Backlund, P., et al., U.S. Climate Change Science Program, 2008. The Effects of Climate Change on Agriculture, Land Resources, Water Resources and Biodiversity in the United States.

<sup>269</sup> Karl, T., J. Melillo, and T. Peterson, (eds.), 2009. Global Climate Change Impacts in the United States, Cambridge University Press. Available at <http://www.globalchange.gov/publications/reports/scientific-assessments/us-impacts>.

<sup>270</sup> Rosenzweig, C., F.N. Tubiello, R. Goldberg, E. Mills and J. Bloomfield, 2002. Increased crop damage in the US from excess precipitation under climate change. *Global Environ. Change*, 12, 197–202.

<sup>271</sup> Backlund, P., et al., U.S. Climate Change Science Program, 2008 The Effects of Climate Change on Agriculture, Land Resources, Water Resources and Biodiversity in the United States.

<sup>272</sup> International Union for the Conservation of Nature, 2008, IUCN Red list Reveals world's mammals in crisis. Available at [http://www.iucn.org/news\\_events/events/congress/index.cfm?uNewsID=1695](http://www.iucn.org/news_events/events/congress/index.cfm?uNewsID=1695)

<sup>273</sup> Thomas C., et al., 2004. Extinction risk from climate change, 427 *Nature* 145.

<sup>274</sup> Intergovernmental Panel on Climate Change, 2007. Impacts, Adaptation and Vulnerability, Summary for Policy Makers.

<sup>275</sup> Intergovernmental Panel on Climate Change, 2007. Impacts, Adaptation and Vulnerability, Summary for Policy Makers.

next 35 to 50 years and to disappear from Alaska altogether due to loss of habitat resulting from global warming.<sup>276</sup>

### *Public Health*

There is a broad consensus among experts within the worldwide public health community that climate change poses a serious threat to public health. The IPCC's Fourth Assessment Report concluded that climate change's likely impacts on public health include: increases in mortality associated with more frequent and more intense heat waves; increased occurrence of deaths, disease, and injury from floods, storms, fires and droughts; increased cardio-respiratory morbidity and mortality associated with ground-level ozone pollution; changes in the range of some infectious disease vectors; and increased malnutrition and consequent disorders, including those relating to child growth and development.<sup>277</sup>

In addition, EPA,<sup>278</sup> the Centers for Disease Control and Prevention (CDC),<sup>279</sup> and NOAA have all concluded climate change poses a serious public health risk. The World Health Organization (WHO) released a quantitative assessment concluding that the effects of climate change may have caused over 150,000 deaths in 2000 and that these impacts are likely to increase in the future.<sup>280</sup> According to the IPCC, climate change contributes to the global burden of disease, premature death and other adverse health impacts.<sup>281</sup>

Heat waves will increase in intensity and frequency in the United States and globally, with significant consequences for human health. The populations most at risk of dying in a heat wave are the elderly and people in underserved communities. The European heat wave of August 2003 is estimated to have killed up to 45,000 people.<sup>282</sup> In France alone, nearly 15,000 people died due to soaring temperatures, which reached as high as 104 °F and remained extreme for two weeks. It is estimated that heat-related deaths in the United States will climb from the current 700 per year to 3,000–5,000 by 2050.<sup>283</sup>

Global warming will exacerbate ground-level ozone pollution, leading to substantial increases in respiratory illness and premature death. Ozone is a known public health threat that can damage lung tissue and exacerbate pre-existing respiratory conditions. The IPCC predicts increased levels of ozone across the eastern United States, "with the cities most polluted today experi-

<sup>276</sup> Harden, B., 2005. Experts Predict Polar Bear Decline, Washington Post. Available at <http://www.washingtonpost.com/wp-dyn/content/article/2005/07/06/AR2005070601899.html>.

<sup>277</sup> Intergovernmental Panel on Climate Change, 2007. Synthesis Report, Summary for Policymakers at 48.

<sup>278</sup> Environmental Protection Agency, Climate Change—Health and Environmental Effects. Available at <http://www.epa.gov/climatechange/effects/health.html>.

<sup>279</sup> Centers for Disease Control and Prevention, CDC Policy on Climate Change and Public Health, Available at [http://www.cdc.gov/climatechange/pubs/Climate\\_Change\\_Policy.pdf](http://www.cdc.gov/climatechange/pubs/Climate_Change_Policy.pdf).

<sup>280</sup> World Health Organization, 2007. Fact Sheet No. 266, Climate and health. Available at <http://www.who.int/globalchange/en/>.

<sup>281</sup> Intergovernmental Panel on Climate Change, 2007. Impacts, Adaptation and Vulnerability at 391–431.

<sup>282</sup> European Commission, Directorate General for Health and Consumer Protection, The 2003 European heat wave. Available at [http://ec.europa.eu/health/ph\\_information/dissemination/unexpected/unexpected\\_1\\_en.htm](http://ec.europa.eu/health/ph_information/dissemination/unexpected/unexpected_1_en.htm).

<sup>283</sup> Centers for Disease Control and Prevention, Climate Change and Public Health: Heat Waves. Available at <http://www.cdc.gov/climatechange/effects/heat.htm>.

encing the greatest increase in ozone pollution.”<sup>284</sup> The increase in temperature in urban areas specifically and increases in ozone can increase rates of cardiovascular and pulmonary illnesses as well as temperature-related morbidity and mortality for children and the elderly.<sup>285</sup> Similar impacts will be felt in urban areas around the globe. By mid-century, ozone related deaths from climate change are predicted to increase by approximately 4.5 percent from the 1990s levels.<sup>286</sup> Even modest exposure to ozone may encourage the development of asthma in children.<sup>287</sup> Recently, an analysis linking CO<sub>2</sub> emissions to mortality revealed that for each increase of 1.8 °F caused by CO<sub>2</sub>, the resulting air pollution would lead to about a thousand additional deaths annually and many more cases of respiratory illness and asthma in the United States.<sup>288</sup>

Climate change will lead to changes in geographic distribution of infectious diseases, with potentially serious impacts on public health in the United States and globally. The WHO estimates that climate change was responsible in 2000 for approximately 2.4 percent of worldwide diarrhea, and 6 percent of malaria in some middle-income countries.<sup>289</sup> If average global temperature increases by a further 1.8 °F, an additional 320 million cases and 176,000 deaths from diarrheal illnesses are expected annually.<sup>290</sup> According to EPA, “[c]limate change may increase the risk of some infectious diseases, particularly those diseases that appear in warm areas and are spread by mosquitoes and other insects.”<sup>291</sup> For example, the IPCC has concluded that the global population at risk from vector-borne malaria will increase by between 220 million and 400 million in the next century.<sup>292</sup> Similarly, the IPCC predicts that climate change is likely to increase the risk and geographic spread of the West Nile virus, a mosquito-borne disease.<sup>293</sup>

### *National Security*

The current and projected impacts of climate change have serious national security consequences for the United States and its allies. The security issues raised by climate change have received increasing attention in recent years both in the U.S. Congress and in international venues.

The first-ever U.S. government analysis of the security threats posed by global climate change was issued in June 2008 as the National Intelligence Assessment (NIA), *National Security Implications of Global Climate Change to 2030*. The 2008 NIA was the re-

<sup>284</sup> Intergovernmental Panel on Climate Change, 2007. Impacts, Adaptation and Vulnerability at 632.

<sup>285</sup> U.S. Climate Change Science Program, 2008. Synthesis and Assessment Product 4.6, Analyses of the Effects of Global Change on Human Health and Welfare and Human Systems at ES-6.

<sup>286</sup> Intergovernmental Panel on Climate Change, 2007. Impacts, Adaptation and Vulnerability at 632.

<sup>287</sup> McConnell, R., et al., 2002. Asthma in exercising children exposed to ozone: A cohort study, 359 *The Lancet* 386; and Gent, J., et al., 2003. Association of low-level ozone and fine particles with respiratory symptoms in children with asthma, 29 *J. Am. Med. Assoc.* 1859.

<sup>288</sup> Jacobson, M., 2008. On the Causal Link Between Carbon Dioxide and Air Pollution Mortality. 35 *Geophysical Research Letters* L03809.

<sup>289</sup> World Health Organization, 2002. World Health Report: Reducing risks, promoting healthy life.

<sup>290</sup> Checkley, W., et al., Effect of El Niño and ambient temperature on hospital admissions for diarrhoeal diseases in Peruvian children, 355 *The Lancet* 442.

<sup>291</sup> Environmental Protection Agency. Climate Change—Health and Environment Effects: Health. Available at <http://www.epa.gov/climatechange/effects/health.html#climate>.

<sup>292</sup> Intergovernmental Panel on Climate Change, 2007. Impacts, Adaptation and Vulnerability.

<sup>293</sup> Intergovernmental Panel on Climate Change, 2007. Impacts, Adaptation and Vulnerability.

sult of a process initiated, in part, by the introduction of H.R. 1961, the “Climate Change Security Oversight Act,” which required the U.S. Intelligence Community to analyze the national security implications of global climate change.

In addition, U.S. and European military and security policy analysts have issued a number of public reports exploring the security consequences of global warming and potential responses. All of these reports emphasize concerns over a few key security impacts, including migration, water scarcity, infrastructure at risk from extreme weather, and new economic routes and access to new energy resources. In most cases, global warming is not creating “new” security threats, but rather is acting as a “threat multiplier.”<sup>294</sup>

Numerous impacts of climate change could ultimately increase both the temporary and permanent migration of people inside and across existing national borders and increase risks of geopolitical instability. Nations dealing with an influx may have neither the resources nor the desire to support climate migrants. As in the past, movement of people into new territory can increase the likelihood of conflict and the potential need for intervention from U.S. and allied military forces.

Rising sea levels threaten low-lying island nations and populous coastal areas. For example, the risk of coastal flooding in Bangladesh is growing and could force 30 million people to search for higher ground in a country already known for political violence. India is already building a wall along its border with Bangladesh.<sup>295</sup> Other economically and agriculturally important coastal areas, like Egypt’s Nile Delta and China’s southeast coast, are also threatened from rising sea level and severe storms. Similar impacts in Central America and the Caribbean could add pressure to existing migration patterns from those areas to the United States.

Increased water scarcity due to climate change will likely increase the risk of conflict. Already, scientists have traced declines in rainfall in the Darfur region to disruption in the African monsoon associated with warming sea surface temperatures<sup>296</sup> which has exacerbated conflict between farmers and nomadic herders. Rapidly melting glaciers in the Andes and the Tibetan Plateau threaten the water supply for some of the most populous countries in the world. The major rivers of India and China originate in the Tibetan Plateau glaciers and are an important component of their summer freshwater resources; dwindling water resources or changes in the flow regime could heighten existing tensions within the region.

Extreme weather events also pose a significant and growing security threat. Many active U.S. coastal military installations around the world are at risk of damage from storm surges and associated flooding. For example, the U.S. airbase at Diego Garcia in the Indian Ocean, which is critical to operations in Iraq and the

<sup>294</sup> McGuinn, Admiral Dennis, 2010. Testimony before the Select Committee on Energy Independence and Global Warming, Hearing on *Not Going Away: America’s Energy Security, Jobs and Climate Challenges*. (December 1, 2010) Available at [http://globalwarming.house.gov/pubs?id=0024#main\\_content](http://globalwarming.house.gov/pubs?id=0024#main_content).

<sup>295</sup> Black, G., 2008. The Gathering Storm, OnEarth. <http://www.onearth.org/article/the-gathering-storm?page=all>.

<sup>296</sup> Giannini, A., et al., 2008. A Global Perspective on African Climate, Climatic Change.

surrounding region, is highly susceptible to coastal storm surges.<sup>297</sup> In September of 2010, the Select Committee held a briefing entitled *Extreme Weather in a Warming World*, in which Pakistan's Ambassador to the United States Husain Haqqani spoke about the security implications of the devastating floods that struck Pakistan in 2010.<sup>298</sup> Military resources, including U.S. helicopters needed to fight terrorists, had to be diverted for humanitarian assistance. Flood-stricken regions of Pakistan with dislocated populations also became more susceptible to the intrusion of terrorism.

Finally, accelerating melting of Arctic sea ice is impacting the United States' strategic interests in the region. Russia has moved to stake claim to over 460,000 square miles of new arctic territory, including areas with potential oil and natural gas resources.<sup>299</sup> With the opening of the Northwest Passage for the first time in recorded history, the Prime Minister of Canada announced his intention to increase his country's military presence in the Arctic.<sup>300</sup> Other circumpolar nations, including the United States, have begun to examine their potential claims on Arctic territory and identify necessary preparations for increased maritime traffic in the area. Given that melting in recent years was almost as great as 2007, this issue will remain one of immediate concern. As new economic routes and energy resources become available, the United States will have to adapt and perhaps redeploy resources to deal with the changing physical and economic landscape.

### *Vulnerable Communities*

While the ramifications of climate change will be felt in every community, the greatest impacts will be borne by those already most economically vulnerable and who have contributed least to climate change. Left unabated, climate change will exacerbate deep inequalities within and between countries. The human face of the climate story is one in which communities least responsible for the climate crisis are the first pushed to the edge of survival, and then ultimately over the edge if they are unable to adapt to climate changes.

Climate change will have devastating impacts on the developing world, reversing gains in poverty alleviation, food security, nutrition, health, and basic services. Poor communities are especially vulnerable because they have less capacity to adapt to climate changes and are more dependent on climate-sensitive resources such as local water and food supplies.<sup>301</sup> Increased exposure to drought and water scarcity, more intense storms and floods, and other environmental pressures will hold back the world's poor from building a better life for themselves and their children.

Climate change is likely to add to the total of 2.6 billion people now living on \$2 a day or less. By the end of the century, an addi-

<sup>297</sup> The CNA Corporation, 2007. *National Security and the Threat of Climate Change*. Available at <http://securityandclimate.cna.org/report/National%20Security%20and%20the%20Threat%20of%20Climate%20Change.pdf>.

<sup>298</sup> Select Committee, *Briefing on Extreme Weather in a Warming World*, (October 23, 2010). Available at [http://globalwarming.house.gov/pubs?id=0023#main\\_content](http://globalwarming.house.gov/pubs?id=0023#main_content).

<sup>299</sup> Borgerson, S., 2008. *Arctic Meltdown: The Economic and Security Implications of Global Warming*. Foreign Affairs.

<sup>300</sup> Borgerson, S., 2008. *Arctic Meltdown: The Economic and Security Implications of Global Warming*. Foreign Affairs.

<sup>301</sup> Intergovernmental Panel on Climate Change, *Climate Change, 2007. Impacts, Adaptation and Vulnerability Summary for Policymakers*.

tional 145 to 220 million people in South Asia and Sub-Saharan Africa could fall below the \$2 per day poverty level as a result of climate change impacts.<sup>302</sup> According to the Stern Review, unchecked climate change could turn 200 million people into refugees this century, precipitating the largest migration in history. In addition, increased frequency and severity of droughts and floods will affect crop productivity and food production, disproportionately affecting the 850 million people already experiencing food scarcity.<sup>303</sup>

Island nations are particularly vulnerable to the impacts of climate change, from the degradation of marine resources to sea level rise. The Republic of the Maldives, for example, is confronting the loss of coral reefs that serve as the basis for its economy, currently driving a productive fishing industry and attracting large numbers of tourists. In the long term, rising sea level represents a truly existential threat; with the highest point on the islands little more than six feet above sea level, all 1,190 islands making up the Maldives could eventually be rendered uninhabitable.

In the United States, climate change impacts are deepening existing inequities. In Alaska, a state already hit hard by climate change, at least three Alaskan villages—Shishmaref, Kivalina, and Newtok—will be lost to coastal erosion due to rising sea levels as soon as in the next decade.<sup>304</sup> As devastating as it may be to watch a town fall into the sea, the more destructive and irreplaceable transformation occurring within these native communities is to cultures and traditional ways of life as global warming transforms the world around them and makes practices and traditions irrelevant or even dangerous.

Climate change may also increase existing health inequities for people of color. In major metropolitan areas, African Americans are more likely than whites to be exposed to higher air toxic concentrations and are nearly three times as likely to be hospitalized or killed by asthma.<sup>305</sup> Latinos, 66 percent of whom live in areas that violate federal air quality standards, face disproportionate health impacts as well.<sup>306</sup> These health inequities may grow, for example, as levels of ground-level ozone increase with warming.

### *Economic Costs of Climate Change*

Climate change impacts of the types described above will have staggering economic impacts in the coming decades. Measuring these impacts in dollars is a challenge, requiring analysis of local and global impacts, long time horizons, quantification of risk and uncertainty, and capturing the possibility of climate tipping points that induce major, catastrophic change. While the variables are numerous and complex, estimates of potential economic impacts are massive.

The Stern Review, one of the most in-depth and respected economic analysis of climate change, used formal economic models to

<sup>302</sup> Stern, N., 2006. Stern Review: The Economics of Climate Change.

<sup>303</sup> Stern, N., 2006. Stern Review: The Economics of Climate Change.

<sup>304</sup> U.S. Army Corps of Engineers, 2006. Alaska Village Erosion Technical Assistance Program. Available at [http://housemajority.org/coms/cli/AVETA\\_Report.pdf](http://housemajority.org/coms/cli/AVETA_Report.pdf).

<sup>305</sup> Environmental Justice and Climate Change Initiative, 2008. Climate of Change: African Americans, Global Warming, and a Just Climate Policy for the U.S. Available at <http://www.ejcc.org/climateofchange.pdf>.

<sup>306</sup> Quintero-Somai, A., et al. (2004). Hidden Danger: Environmental Health Threats in the Latino Community. Natural Resources Defense Council. Available at [http://www.nrdc.org/health/effects/latino/english/latino\\_en.pdf](http://www.nrdc.org/health/effects/latino/english/latino_en.pdf).

estimate that unabated climate change will cost at least 5 percent of global gross domestic product (GDP) each year, now and forever.<sup>307</sup> If a wider range of risks and impacts is considered, the damages could rise to 20 percent or more of GDP annually over the next two centuries.

In the United States, the economic impacts of climate change will be felt throughout the country and within all sectors of the economy. The greatest economic impacts will likely result from stress to freshwater supplies, changes to the agricultural sector, damage to coastal infrastructure from storms and sea level rise, effects on energy supply and demand, adverse impacts to human health, and more frequent and extensive forest fires.<sup>308</sup> Tourism and other weather-dependent industries will continue to be hit especially hard as well.

Modeling results from a Tufts University and Natural Resources Defense Council study show that if present trends continue, the total cost of only four global warming impacts in the United States—hurricane damage, real estate losses, energy costs, and water costs—will cost nearly \$1.9 trillion annually by 2100 (in constant 2008 dollars), or 1.8 percent of U.S. GDP. Factoring in a wider range of harms such as health impacts and wildlife damages, these costs could reach 3.6 percent of GDP annually in the United States by 2100.<sup>309</sup>

#### CLIMATE SCIENCE IN THE POLITICAL ARENA

As the political debate over climate change solutions has gained prominence, climate science and the climate scientists themselves have become targets of politically motivated attacks. A number of such incidents occurred during the 111th Congress. The Select Committee played an important role in informing the public on these issues and bringing the best-available climate science into discussions and debates of U.S. energy and climate policy.

#### *Hacked Email Incident Explained*

In November of 2010, emails and electronic documents were stolen from the Climatic Research Unit (CRU) at the University of East Anglia. The emails were subsequently taken out of context and distorted to smear the reputations of certain climate scientists and challenge the well-established conclusions of climate science.

However, all of the official reviews of the hacked email incident cleared climate scientists of any wrongdoing and showed there was no real substance to the allegations; the official reviews included the UK House of Commons Report,<sup>310</sup> the Oxburgh panel report,<sup>311</sup>

<sup>307</sup> Stern, N., 2006. Stern Review: The Economics of Climate Change.

<sup>308</sup> Ruth, M., et al., 2007. The US Economic Impacts of Climate Change and the Costs of Inaction. University of Maryland Center for Integrative Environmental Research. Available at [http://dl.klima2008.net/ccsl/us\\_economic.pdf](http://dl.klima2008.net/ccsl/us_economic.pdf).

<sup>309</sup> Ackerman, F., and E. Stanton, 2008. The Cost of Climate Change: What We'll Pay if Global Warming Continues Unchecked. Natural Resources Defense Council. Available at <http://www.nrdc.org/globalwarming/cost/cost.pdf>.

<sup>310</sup> House of Commons Science and Technology Committee, 2010. The disclosure of climate data from the Climatic Research Unit at the University of East Anglia. Available at <http://climateprogress.org/wp-content/uploads/2010/03/HC387-IUEAFinalEmbargoedv21.pdf>; and Secretary of State for Energy and Climate Change, 2010. Government Response to the House of Commons Science and Technology Committee 8th Report of Session 2009–10: The disclosure of climate data from the Climatic Research Unit at the University of East Anglia. Available at <http://www.official-documents.gov.uk/document/cm79/7934/7934.pdf>.

<sup>311</sup> Oxburgh, R., H. Davies, K. Emanuel, L. Graumlich, D. Hand, H. Huppert, and M. Kelly, 2010. Report of the International Panel set up by the University of East Anglia to examine the



the Sir Muir Russell Report,<sup>312</sup> and the Penn State Report.<sup>313</sup> The Sir Muir Russell panel's review of the scientists whose emails were stolen concluded that, "their rigor and honesty as scientists are not in doubt." Their review also states that, "we did not find any evidence of behavior that might undermine the conclusions of the IPCC assessments."

The Select Committee held a series of hearings that examined the hacked email incident. In December of 2010, the Select Committee heard testimony from President Obama's science advisor, Dr. John Holdren, and the NOAA Administrator, Dr. Jane Lubchenco, emphasizing that it is the results of thousands of researchers from hundreds of research facilities around the world that makes global warming unequivocal, not the work of a single research group.<sup>314</sup> In fact, NASA and NOAA have conducted independent research that fully confirms the findings of the Climatic Research Unit that came under attack.

In a separate hearing held in May of 2010, the Select Committee heard directly from one of the members of the Oxburgh inquiry panel, which reviewed the hacked email incident; Dr. Lisa Graumlich, then of the University of Arizona, reported that she and her colleagues on the Oxburgh panel "saw no evidence of any deliberate scientific malpractice in any of the work of the Climatic Research Unit." The Select Committee also issued a report explaining how some of the emails—namely those related to Dr. Michael Mann and his analysis of temperature records—were inappropriately taken out of context and that the fundamental conclusions of his work were robust and independently verified by numerous research groups, including the National Research Council.<sup>315</sup>

#### *Harassment of Climate Scientists*

Following the hacked email incident described above, harassment and intimidation of some climate scientists sharply increased.

In May of 2010, the Select Committee held a hearing to examine the harassment and intimidation of climate scientists.<sup>316</sup> Dr. Ben Santer of Lawrence Livermore National Laboratory told the Committee, "I firmly believe that I would now be leading a different life if my research suggested that there was no human effect on climate. I would not be the subject of Congressional inquiries, Freedom of Information Act requests, or email threats. I would not need to be concerned about the safety of my family. I would not need to be concerned about my own physical safety when I give public lectures."

The late Dr. Stephen Schneider of Stanford University, an early and influential voice on climate change, described a shift in the cli-

research of the Climatic Research Unit. Available at <http://www.uea.ac.uk/mac/comm/media/press/CRUstatements/SAP>.

<sup>312</sup> Russell, M., G. Boulton, P. Clarke, D. Eyton, and J. Norton, 2010. The Independent Climate Change Email Review, Available at <http://www.cce-review.org/>.

<sup>313</sup> The Pennsylvania State University, 2010. RA-10 Final Investigation Report Involving Dr. Michael E. Mann. Available at [http://live.psu.edu/fullimg/userpics/10026/Final\\_Investigation\\_Report.pdf](http://live.psu.edu/fullimg/userpics/10026/Final_Investigation_Report.pdf).

<sup>314</sup> Revkin, A., 2009. On Climate Data, Trends and Peer Review. New York Times, Available at <http://dotearth.blogs.nytimes.com/2009/11/30/more-on-the-climate-files-and-climate-trends/>.

<sup>315</sup> Select Committee staff analysis of the stolen electronic documents from the CRU. Available at <http://globalwarming.house.gov/files/DOCS/SelectCommitteeAnalysisStolenElectronicDocuments.pdf>.

<sup>316</sup> Select Committee, Hearing on *Climate Science in the Political Arena*, (May 20, 2010). Available at [http://globalwarming.house.gov/pubs?id=0019#main\\_content](http://globalwarming.house.gov/pubs?id=0019#main_content).

mate debate since the 1970s, saying, “It was always civil. It was always bipartisan. And it has now gotten to the point where things have become accusatory and highly ideological, and that is very unfortunate.” All of the witnesses participating decried political attacks on climate scientists and advocated for a civil dialogue on the issue of climate change.

### *IPCC Criticism Explained*

During the 111th Congress, the IPCC and its Chairman Rajendra Pachauri were also the target of many politically motivated attacks. A number of alleged errors in the IPCC’s 2007 Fourth Assessment Report—namely the section on Impacts, Adaptation and Vulnerability—received a great deal of attention. The alleged errors were used to question the conclusions of the IPCC’s Fourth Assessment Report, even those derived from other sections of the report. In fact, only one of the alleged errors—an error in the year that Himalayan glaciers are expected to disappear—was legitimate; the IPCC admitted the error and corrected it.<sup>317</sup> Close scrutiny by climate science experts revealed that the other allegations of errors were false.

Numerous newspapers have since retracted stories perpetuating the false allegations against the IPCC. The UK’s *Sunday Times* issued an apology and retracted an erroneous story about the IPCC’s discussion of climate change impacts in the Amazon, acknowledging that, “In fact, the IPCC’s Amazon statement is supported by peer-reviewed scientific evidence.”<sup>318</sup> The UK’s *Telegraph* issued an apology to IPCC Chairman Rajendra Pachauri for putting forth allegations of financial irregularity that were proven false by an independent review. Following the exoneration, the *Telegraph* stated, “We apologise to Dr. Pachauri for any embarrassment caused.”<sup>319</sup> The Netherlands Government has also accepted responsibility for erroneous information that they provided to the IPCC and which was wrongly attributed to the IPCC in news reports. While the error had no bearing on the IPCC’s conclusions, the Netherlands Government appropriately stated, “We acknowledge that this error was not the fault of the IPCC.”<sup>320</sup> Further, an official review of IPCC procedures and process coordinated by the InterAcademy Council determined that in fact “the IPCC assessment process has been successful overall.”<sup>321</sup>

The Select Committee held a series of hearings in which the allegations against the IPCC were examined and debunked. In a Select Committee hearing in May of 2010,<sup>322</sup> for example, Dr. Ben Santer of the Lawrence Livermore National Laboratory told the Com-

<sup>317</sup> Intergovernmental Panel on Climate Change, Statement on the melting of Himalayan glaciers. (2010). Available at <http://www.ipcc.ch/pdf/presentations/himalaya-statement-20january2010.pdf>.

<sup>318</sup> Kintisch, E., 2010. As Climate Scientists Battle the Press, One Receives Rare Apology From Paper. *Science*. Available at <http://news.sciencemag.org/scienceinsider/2010/06/climate-scientists-battle-press.html>.

<sup>319</sup> The Telegraph, Dr Pachauri—Apology (August 20, 2010). Available at <http://www.telegraph.co.uk/news/7957631/Dr-Pachauri-Apology.html>.

<sup>320</sup> Netherland Environmental Assessment Agency, 2010. Assessing an IPCC assessment: An analysis of statements on projected regional impacts in the 2007 report. Available at [http://www.pbl.nl/images/500216002\\_tcm61\\_48119.pdf](http://www.pbl.nl/images/500216002_tcm61_48119.pdf).

<sup>321</sup> InterAcademy Council, 2010. Climate change assessments: Review of the processes and procedures of the IPCC. Available at <http://reviewipcc.interacademycouncil.net/report.html>.

<sup>322</sup> Select Committee, Hearing on *Climate Science in the Political Arena*. (May 20, 2010). Available at [http://globalwarming.house.gov/pubs?id=0019#main\\_content](http://globalwarming.house.gov/pubs?id=0019#main_content).

mittee that, “Responses to these unfounded allegations have been given in a variety of different fora by myself, by the IPCC, and by other scientists, yet the allegations remain much more newsworthy than the rebuttals.” Dr. Mario Molina, a Nobel Laureate in Chemistry, told the Committee that, “There appears to be a gross misunderstanding of the nature of climate change science among those that have attempted to discredit it. They convey the idea that the science in question behaves like a house of cards. If you remove just one card, the whole structure falls part. However, this is certainly not the way the science of complex systems works. A much better analogy is a jigsaw puzzle. Many pieces are missing, some might even be in the wrong place, but there is little doubt that the overall image is clear, namely, that climate change is a serious threat that needs to be urgently addressed.”

### PART III: THE ECONOMIC CHALLENGE: JOBS AND CLEAN TECH GROWTH

The United States stands at a critical moment with regard to the relationship between our economy and our energy system. Our economic future is threatened by continued dependence on foreign oil and other fossil fuels. Our electric grid and transportation system are inefficient. We are losing the lead in development of alternative energy technologies to countries like Germany and China. We are vulnerable to volatility and speculation in our energy markets. In short, the United States cannot continue business as usual and expect to maintain our current level of economic competitiveness.

Fortunately, the energy and climate challenges we are facing represent an unprecedented opportunity for an innovation-driven economic revival in which clean energy solutions—built by American workers—are marketed around the world. Investments in renewable energy create, on average, three to five times as many jobs as similar investments in fossil-fuel energy systems.<sup>323</sup> Rather than energy dollars going to expensive fuels that are quickly burned up, energy dollars that go into renewable energy systems go to actual workers building machines that, once assembled, run on free fuel for their operating lifetimes.<sup>324</sup>

The world will need to invest \$26 trillion over the next 2 decades in order to meet our energy needs.<sup>325</sup> Clean energy will likely make up an increasing share of this investment with each passing year, and the International Energy Agency estimates that, globally, \$5.7 trillion will be invested in renewable electricity generation alone between 2010 and 2035.<sup>326</sup> The nations that move aggressively to support their young clean energy industry and workers will have a leg up in leading this key growth sector. With more than 90 percent of the increase in global energy demand coming from outside the 34 wealthy industrial nations,<sup>327</sup> the clean energy sector rep-

<sup>323</sup> Kammen, Kapadia and Fripp, *Putting Renewables to Work: How Many Jobs Can the Clean Energy Industry Generate?* (2004). Available at [http://www.ewea.org/fileadmin/ewea\\_documents/documents/policy/external\\_documents/040413\\_renewables\\_berkeley.pdf](http://www.ewea.org/fileadmin/ewea_documents/documents/policy/external_documents/040413_renewables_berkeley.pdf).

<sup>324</sup> In the case of biomass, there are fuel costs but these fuels are renewable and prices are less volatile.

<sup>325</sup> International Energy Agency, *World Energy Outlook 2009*, Available at <http://www.worldenergyoutlook.org/>.

<sup>326</sup> International Energy Agency, *World Energy Outlook 2010*, Available at <http://www.worldenergyoutlook.org/>.

<sup>327</sup> *Id.*

resents an opportunity to help countries develop alternatives to the fossil fuel development pathway followed by the United States and other developed countries. Further, with half of the current U.S. trade deficit coming from imported oil, clean energy represents a huge export market that has the potential to reverse our energy-driven trade imbalance.

Clean energy is already an important player in the world's energy markets. For example, the 2009 market for wind turbine installations was worth \$63 billion and more than 600,000 people are now directly employed in the industry.<sup>328,329</sup> In the U.S., there were 39 new announced or expanded wind manufacturing facilities in 2009, and more than 200 facilities in production.<sup>330</sup> Over 60 percent of the value of wind turbines installed in America is now produced domestically, an increase from 25 percent in 2004.<sup>331</sup> Total U.S. wind turbine manufacturing capacity is expected to reach 12,000 megawatts per year by 2012.<sup>332</sup> Coal mining jobs have dropped precipitously—by more than 60 percent—over the past 30 years (246,300 in 1980 to 80,000 in 2010). Meanwhile, the wind industry has taken off. Since 2007, wind jobs have increased 70 percent and have surpassed coal mining jobs to employ 85,000 workers across all 50 states.<sup>333</sup> The solar industry doubled the number of people working in the industry in the United States from 2009 to 2010, to 93,000 workers in all 50 states.<sup>334</sup>

The energy efficiency sector is a huge untapped resource with the potential to increase economic productivity and save U.S. consumers money. McKinsey & Company research has found that the U.S. economy has the potential to reduce annual non-transportation energy consumption by roughly 23 percent within a decade. Such action would eliminate more than \$1.2 trillion in waste, far more than the \$520 billion in required upfront investment. California regulators have similarly found that state efficiency programs produce savings at a rate of two dollars or more for every dollar invested.<sup>335</sup> According to the Union of Concerned Scientists, a requirement on utilities to meet a certain share of their load

<sup>328</sup> Global Wind Energy Council, Global Wind 2009 Report, March 2010 available at [http://www.gwec.net/fileadmin/documents/Publications/Global\\_Wind\\_2007\\_report/GWEC\\_Global\\_Wind\\_2009\\_Report\\_LOWRES\\_15th.%20Apr.pdf](http://www.gwec.net/fileadmin/documents/Publications/Global_Wind_2007_report/GWEC_Global_Wind_2009_Report_LOWRES_15th.%20Apr.pdf).

<sup>329</sup> Global Wind Energy Council. Latest News: Wind power to provide a fifth of world's electricity by 2030, (Dec 10, 2010). Available at: [http://www.gwec.net/index.php?id=30&no\\_cache=1&tx\\_ttnews\[tt\\_news\]=270&tx\\_ttnews\[backPid\]=4&cHash=97741fa57b](http://www.gwec.net/index.php?id=30&no_cache=1&tx_ttnews[tt_news]=270&tx_ttnews[backPid]=4&cHash=97741fa57b).

<sup>330</sup> American Wind Energy Association, U.S. Wind Industry Annual Market Report—Year Ending 2009, available at [http://e360.yale.edu/images/digest/Annual\\_Market\\_Report\\_Wind.pdf](http://e360.yale.edu/images/digest/Annual_Market_Report_Wind.pdf).

<sup>331</sup> American Wind Energy Association, Fact sheet: Wind Energy Manufacturing: Rapid Growth in the United States (2010).

<sup>332</sup> Bloomberg New Energy Finance, *Joined at the Hip: the US-China Clean Energy Relationship*, (2010). Available at [bnef.com/free-publications/white-papers](http://bnef.com/free-publications/white-papers).

<sup>333</sup> Coal mining jobs data includes employees engaged in production, preparation, processing, development, maintenance, repair, shop or yard work at mining operations. Excludes office workers and mines producing less than 10,000 short tons annually and preparation plants with less than 5,000 employee hours. Wind jobs total includes turbine component manufacturing, construction and installation of wind turbines, wind turbine operations and maintenance, legal and marketing services. See Energy Information Administration, Coal Data: A Reference, page 79 Table 22. *U.S. Coal Mining Average Employment, Hours Worked, and Earnings, Selected Years* available at <http://tonto.eia.doe.gov/FTPROOT/coal/006493.pdf>; and American Wind Energy Association, [http://www1.eere.energy.gov/windandhydro/news\\_detail.html?news\\_id=15927](http://www1.eere.energy.gov/windandhydro/news_detail.html?news_id=15927).

<sup>334</sup> The Solar Foundation, National Solar Job Census 2010, (October 2010) available at <http://www.environmentwashington.org/uploads/21/d0/21d00a2f59894f096c52d4c6567f0e64/Final-TSF-National-Solar-Jobs-Census-2010-Web-Version.pdf>.

<sup>335</sup> See, e.g., California Public Utilities Commission and California Energy Commission, *Energy Efficiency—California's Highest Priority Resource* (Aug. 2006), available at <ftp://ftp.cpuc.ca.gov/Egy-Efficiency/CalCleanEng-English-Aug2006.pdf>.

through energy efficiency measures, in combination with an RES, would reap huge savings for U.S. consumers. The average U.S. household would save nearly \$100 annually on their energy costs in 2030, and electricity and natural gas expenditures would be reduced by a total of \$113 billion through 2030.<sup>336</sup>

The Pew Environment Group has found that clean energy jobs grew 2.5 times faster than jobs in the U.S. overall between 1998 and 2007, and 770,000 people are now employed in clean energy jobs across the country.<sup>337</sup> China is estimated to now have more than 1 million people employed directly through the clean energy sector.<sup>338</sup> The German renewable energy sector increased to more than 300,000 in 2009, nearly half in the last five years.<sup>339</sup>

While opponents of clean energy and climate protection have proliferated arguments intended to undermine the scientific consensus on climate change and stall policy action, many in the financial community that put real investment capital at risk have analyzed the climate change threat, drawn clear conclusions, and moved capital to the markets where policies reflect this threat. One large financial institution, Deutsche Bank, went so far as to partner with the expert scientists at the Earth Institute at Columbia University to determine the validity of climate skeptic claims. The central conclusion of this large institutional investor was clear: “the primary claims of the skeptics do not undermine the assertion that human-made climate change is already happening and is a serious long-term threat.”<sup>340</sup> It is therefore no surprise that Deutsche Bank, with nearly \$7 billion in climate change-related investments under management, has placed only about \$45 million into that sector in the United States, instead focusing investments in China and Western Europe.<sup>341</sup>

The United States has fallen behind China in building a robust clean energy sector. In 2009, \$35 billion was invested in the Chinese clean energy sector, nearly twice the amount invested in the United States. During the coming decade, China has pledged to support \$738 billion in investment in their domestic clean energy sector.<sup>342</sup> In less than a decade, China has gone from manufacturing less than 1 percent of the world’s solar panels to nearly half. Upwards of 95 percent of these solar modules are exported. This \$15 billion in solar exports is more valuable than America’s corn, beef, and chicken exports combined.

Some of China’s clean energy programs may be illegal violations of international trade agreements. On September 9, 2010, the

<sup>336</sup> Union of Concerned Scientists, *A Better Climate Bill*, (2010). Available at [http://www.ucsusa.org/clean\\_energy/solutions/big\\_picture\\_solutions/a-better-climate-bill.html](http://www.ucsusa.org/clean_energy/solutions/big_picture_solutions/a-better-climate-bill.html).

<sup>337</sup> Pew Environment Group, *Who’s Winning the Clean Energy Race?* (2010). [http://www.pewtrusts.org/uploadedFiles/wwwpewtrustsorg/Reports/Global\\_warming/G-20%20Report.pdf?n=5939](http://www.pewtrusts.org/uploadedFiles/wwwpewtrustsorg/Reports/Global_warming/G-20%20Report.pdf?n=5939)

<sup>338</sup> Bradsher, Keith, *New York Times*, *On Clean Energy, China Skirts Rules*, (September 8, 2010). Available at <http://www.nytimes.com/2010/09/09/business/global/09trade.html?pagewanted=all>.

<sup>339</sup> Bloomberg New Energy Finance, *Global Trends in Sustainable Energy Investment 2010 Report* (2010) Available at <http://bnef.com/free-publications/white-papers>.

<sup>340</sup> Deutsche Bank Climate Change Advisors, *Climate Change: Addressing the Major Skeptic Arguments* (September 2010) Available at [http://www.dbcca.com/dbcca/EN/\\_media/DBCCAColumbiaSkepticPaper090710.pdf](http://www.dbcca.com/dbcca/EN/_media/DBCCAColumbiaSkepticPaper090710.pdf).

<sup>341</sup> Reuters, *Deutsche Bank spurns U.S. for climate investment*, (Aug 11, 2010) Available at <http://www.reuters.com/article/idUSTRE67A3JK20100811>.

<sup>342</sup> Bloomberg, *China May Spend \$738 Billion on Clean Energy Projects*, (July 20, 2010) Available at [http://www.businessweek.com/news/2010\\_07\\_20/china-may-spend\\_738\\_billion-on-clean-energy-projects.html](http://www.businessweek.com/news/2010_07_20/china-may-spend_738_billion-on-clean-energy-projects.html).

United Steelworkers union filed a comprehensive trade case with the United States Trade Representative (USTR) alleging an array of Chinese policies and practices that threaten the future of America's clean energy sector.<sup>343</sup> The case, which USTR began officially investigating on October 15, 2010,<sup>344</sup> alleges that China has utilized hundreds of billions of dollars in subsidies, performance requirements, preferential practices and other illegal trade activities to advance its control of the sector. The Select Committee is very concerned about China's use of unfair trade practices to bolster the competitiveness of its industries and urges prompt action to address violations found through the U.S. Trade Representative's investigation.<sup>345</sup>

One aspect of the Steelworkers' petition relates to China's restrictions on access to rare earth elements and other critical materials, an issue that intensified in late 2010 and demonstrated the unacceptably high strategic value these critical materials have reached.<sup>346</sup> China currently produces 95 percent of the world's rare earth elements and in September 2010 began restricting export of these materials to Japan in retaliation for Japan's detention of a Chinese fishing boat captain that was operating in disputed territorial waters. China has also increased export duties and cut 2010 export quotas by 40 percent compared to 2009 levels.<sup>347</sup> With demand for critical materials growing rapidly and China becoming an increasingly unreliable global supplier, taking steps to encourage the development of critical material production outside of China will be important in bolstering U.S. energy independence.

As mature industries increasingly move overseas to access cheaper labor, technology and innovation-driven sectors will become the key to sustaining economic growth and creating good jobs. It has been estimated that over 90 percent of new economic growth results from public and private sector investments in innovation.<sup>348</sup> By this measure, the established energy industry now dominated by massive companies and outdated business models is decidedly not a high-growth, job-creating, innovation-oriented sector. While investment in research and development (R&D) is roughly 3 percent of gross domestic product, it is roughly one-tenth that level in the energy sector. By contrast, R&D investments in the medical and biotechnology field are roughly 15 percent of sales, almost 40 times more than in the energy field.<sup>349</sup> Policies that increase com-

<sup>343</sup> United Steelworkers, USW Files Trade Case to Preserve Clean, Green Manufacturing Jobs in America (September 9, 2010) available at [http://www.usw.org/media\\_center/releases\\_advisories?id=0327](http://www.usw.org/media_center/releases_advisories?id=0327).

<sup>344</sup> United States Trade Representative, United States Launches Section 301 Investigation into China's Policies Affecting Trade and Investment in Green Technologies, available at <http://www.ustr.gov/node/6227>.

<sup>345</sup> Chairman Edward J. Markey, Select Committee Opening Statement: Hearing on "The Global Clean Energy Race" (September 22, 2010) available at <http://globalwarming.house.gov/files/HRG/092210Global/markeyOpening.pdf>.

<sup>346</sup> Rare earth elements are a collection of 17 elements that are indispensable to a wide range of military, electronic, and industrial applications, as well as a variety of clean energy technologies, such as wind turbines, hybrid vehicles, solar panels and energy efficient light bulbs.

<sup>347</sup> Secretary Chu, Secretary Locke, U.S. Trade Representative Kirk, *Responses to Questions from Representative Markey*, (December 13, 2010) available at [http://globalwarming.house.gov/files/SHARE/12\\_13-10\\_RareEarthMaterials.pdf](http://globalwarming.house.gov/files/SHARE/12_13-10_RareEarthMaterials.pdf).

<sup>348</sup> Dan Kammen, Testimony for Select Committee Hearing "Investing in the Future: R&D Needs to Meet America's Energy and Climate Challenges" on September 10, 2008. Available at <http://globalwarming.house.gov/tools/2q08materials/files/0147.pdf>.

<sup>349</sup> Dan Kammen, Testimony for Select Committee Hearing "Investing in the Future: R&D Needs to Meet America's Energy and Climate Challenges" on September 10, 2008. Available at <http://globalwarming.house.gov/tools/2q08materials/files/0147.pdf>.

petition and open markets to new technologies and business models will accelerate the transition to an innovation-oriented, job-creating energy sector.

Meanwhile, the Big Five oil and gas companies are raking in record-breaking profits—\$321 billion between 2007 and 2009.<sup>350</sup> Instead of favoring greater exploration or alternative energy investments as the price of oil has raced upwards, the oil majors have preferred to increase stock buybacks, which grew from \$10 billion in 2003 to \$60 billion in 2006. Exploration spending from the five largest oil companies was flat or decreased during this period. In 2009, the major oil companies invested more than \$56 billion in dividends and stock repurchases and less than \$4 billion on all types of research and development.<sup>351</sup>

Putting Americans back to work on retrofitting buildings to improve energy efficiency, expanding mass transit and freight rail, constructing a “smart” electrical grid, building and installing wind and solar energy systems, as well as developing next-generation biofuels would ensure the clean energy technology revolution brings working Americans along with it.

## SELECT COMMITTEE ACTIVITIES

### I. INVESTIGATION INTO THE BP DEEPWATER HORIZON OIL SPILL

The Select Committee, together with the Energy and Commerce Committee, Subcommittee on Energy and Environment, conducted an extensive, groundbreaking investigation into the BP Deepwater Horizon Oil spill. As a result of this investigation the Congress and the public gained a much better understanding of the true amount of oil spilled and its actual effects on the Gulf of Mexico. The investigation also forced BP to make publicly available its live video feed of the spill occurring 5,000 feet below the ocean surface and revealed many instances of BP’s and other oil companies’ lack of preparation and inadequate response plans.

#### SUMMARY OF INCIDENT

On April 20, 2010, at about 10 p.m., an explosion occurred on the Deepwater Horizon oil drilling rig in the Gulf of Mexico. There were 126 people on board at the time. Fifteen people were injured and eleven workers were killed. The Deepwater Horizon, owned by Transocean Ltd., was under a contract with BP to drill an exploratory well. BP was the lessee of the area in which the rig was operating. At the time of the explosion, BP and Transocean were in the process of temporarily closing the well, in anticipation of returning to the well in the future for commercial production. Halliburton had completed some cementing of casings in the well less than 24 hours prior to the accident. On April 22, 2010, the Deepwater Hori-

<sup>350</sup> Excludes ConocoPhillip’s one-time write down of more than \$34 billion in domestic oil exploration and production and investments in the Russian oil company Lukoil, which led to its reported \$16 billion loss in 2008. See Weiss, Daniel and Alexandra Kougentakis, Center for American Progress, “Big Oil Misers” (March 31, 2009), available at [http://www.americanprogress.org/issues/2009/03/big\\_oil\\_misers.html](http://www.americanprogress.org/issues/2009/03/big_oil_misers.html); and 10-K, Proxy Statements, and 20-F forms for BP, PLC, Exxon Mobil, ConocoPhillips, Chevron, and R.D. Shell.

<sup>351</sup> Weiss, Daniel and Alexandra Kougentakis, Center for American Progress, “Big Oil Misers” (March 31, 2009), available at [http://www.americanprogress.org/issues/2009/03/big\\_oil\\_misers.html](http://www.americanprogress.org/issues/2009/03/big_oil_misers.html).

zon rig sank and two days later, Remotely Operated Vehicles (ROVs) found oil leaking from the broken riser pipe.

Ultimately, oil would continue leaking from the Macondo well for 87 days before the well was finally capped on July 15, 2010. The government's Flow Rate Technical Group (FTRG) concluded that during that period, oil had been leaking into the Gulf of Mexico at a rate beginning at 62,000 barrels per day and ending at 53,000 barrels per day prior to the well being capped.<sup>352</sup> According to the FTRG, a total of 4.1 million barrels of oil were spilled into the Gulf of Mexico, with an addition 800,000 barrels having been captured aboard containment ships responding to the crisis.<sup>353</sup> The BP Deepwater Horizon oil spill ultimately became the largest oil spill in the history of the United States.

#### SUMMARY OF CHAIRMAN MARKEY'S INVESTIGATION

Chairman Markey helped lead the investigation in Congress into the causes of and response to the BP Deepwater Horizon disaster. Chairman Markey's investigation focused on a number of key areas.

##### *Forced BP to Make Live Video of the Oil Spill Available to the Public*

It took 23 days for BP to produce underwater images from ROVs at the leak site. After the first shocking images appeared, Chairman Markey pressured BP to release a live video feed of the leak from the ocean floor. This live video feed from the "Spillcam" appeared on the Select Committee website on May 19, 2010. Within a few days, more than a million people had visited the Select Committee website to see the images of the spill.

##### *Uncovered the Truth About the Size of the Oil Spill*

BP initially claimed that oil was spilling into the Gulf of Mexico at the rate of 1,000 barrels a day. However, Chairman Markey uncovered documents from BP that showed as early as April 27, 2010, the company knew that the spill could be as large as 14,0266 barrels per day and its "best guess" was that 5,758 barrels were leaking. Despite this knowledge, BP's top official in the Gulf continued to maintain that the spill was 1,000 barrels per day and resist efforts to increase the estimate to 5,000 barrels per day.

Chairman Markey also convened the first briefing on Capitol Hill with officials from BP, Halliburton and Transocean on May 4, 2010. During the closed door briefing, BP officials admitted that a worst case scenario from the Macondo well would be a spill of 60,000 barrels per day. Chairman Markey was later able to provide video images of the spill to scientific experts, who warned Congress that based on those images, the spill might be much larger than what BP was asserting. The size of the spill was critical information not only to inform response efforts but also to ultimately decide BP's financial liability.

<sup>352</sup>National Incident Command's Flow Rate Technical Group (2010) Available at <http://www.doi.gov/news/pressreleases/US-Scientific-Teams-Refine-Estimates-of-Oil-Flow-from-BP-Well-Prior-to-Capping.cf>.

<sup>353</sup>National Incident Command's Flow Rate Technical Group (2010) Available at <http://www.doi.gov/news/pressreleases/US-Scientific-Teams-Refine-Estimates-of-Oil-Flow-from-BP-Well-Prior-to-Capping.cfm>.



*Creation of an Independent Panel to Investigate the Spill*

Chairman Markey was the first Member of Congress to call on President Obama to create an independent, blue-ribbon commission to investigate the causes of the BP oil spill and to make safety recommendations on deepwater drilling moving forward. The President responded by establishing the National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling through executive order on May 21, 2010.<sup>354</sup> This bipartisan commission was headed by former Sen. Bob Graham and former EPA Administrator William Reilly.

Chairman Markey further pushed for legislation to grant this bipartisan panel subpoena power, which was not possible through executive order. On June 23, 2010, the House passed legislation to give the commission subpoena power in an overwhelming, bipartisan vote of 420–1. However, consideration of that legislation, H.R. 5481, was ultimately blocked in the Senate.

*Uncovered Flawed Oil Spill Response Plans from all Major Oil Companies*

In examining the Gulf of Mexico oil spill response plans for the five major oil companies, ExxonMobil, Chevron, BP, Shell and ConocoPhillips, Chairman Markey found that none of these companies were any better prepared to respond to a deepwater blowout than was BP. In fact, these five companies had response plans that were virtually identical.

The oil spill response plans cited identical response capabilities and touted identical ineffective equipment. In some cases, they used the exact same words. Like BP, three other companies include references to protecting walruses, which have not been found in the Gulf of Mexico home for 3 million years. BP and two other companies all listed a scientific expert as a resource who had died years earlier. All in all, the response plans for these companies were 90 percent identical.

*The First Congressional Delegation to the Region*

On May 7, 2010, Chairman Markey led the first Congressional Delegation to the Gulf Coast following the BP Deepwater Horizon Incident. Members flew over the spill site to view the impacts, met with the officials leading the response efforts at the Unified Command Center in Robert, LA, and visited a staging area on the coast.

*Oversight of Efforts by EPA and the Coast Guard to Curb BP's Use of Dangerous Chemical Dispersants*

Despite the assertions made by BP that dispersants could be safely used on the surface and at the sea floor, Congressman Markey conducted considerable oversight of the manner in which the 1.8 million gallons of dispersants were applied to Gulf of Mexico waters. Congress warned of potential harm that long-term use of these chemicals could have on the marine environment, the food chain and families living in the Gulf of Mexico, particularly since

<sup>354</sup> Executive Order 13543. Available at <http://m.whitehouse.gov/the-press-office/executive-order-national-commission-bp-deepwater-horizon-oil-spill-and-offshore-dri>.

BP decided to use the least effective and most toxic formulation of dispersants to combat the effects of the spill.

As a result of concerns expressed by Chairman Markey regarding their use and EPA's analysis of these risks, on May 26, 2010 EPA and the Coast Guard directed BP to completely eliminate surface application of dispersants except in "rare cases" when an exemption might be needed.<sup>355</sup> EPA and the Coast Guard further directed BP to reduce the overall volume of dispersant by 75 percent from the maximum daily amount used (70,000 gallons per day) and to limit subsurface application to no more than 15,000 gallons per day. If BP wished to deviate from these instructions, it was required to make a written request and obtain approval from the Federal On-Scene Coordinator, which was the Coast Guard in this case. On July 30, 2010, Chairman Markey released analysis of the actual volumes applied following this directive, which indicated that the Coast Guard approved requests to use dispersants on an almost-daily basis, despite the directive that these approvals be issued in only "rare" cases.<sup>356</sup> Chairman Markey also conducted extensive oversight to ensure that seafood was being examined to ensure that it was not contaminated with dispersants.

#### *Monitoring the Effects of Dispersants and Oil on Seafood*

Chairman Markey also conducted extensive oversight to ensure that seafood harvested from the Gulf of Mexico was being appropriately monitored for the presence of dispersants, oil and other by-products of the oil spill, such as toxic heavy metals. A series of letters to the FDA prodded FDA to do more to monitor the long-term consequences of the spill on food safety to ensure that the public has confidence in the safety of seafood from the Gulf. As a result of these concerns, the FDA developed a chemical test to detect the presence of dispersant in fish, oysters, crab and shrimp, which was announced on October 29, and subsequently used as a part of the protocol to reopen waters in the Gulf to fishing.

#### *Creation of a \$500 Million Research Fund*

Chairman Markey called on the companies responsible for the disaster to pay for outside research by independent scientists to analyze the environmental impacts of the spill. Following Chairman Markey's request, BP pledged on May 24, 2010 to donate \$500 million to establish this fund which will also assess the ecological impacts on the Gulf. However, only \$40 million of the \$500 million pledged has been disbursed by BP to date, hindering the efforts of scientists to understand the full consequences of the spill.<sup>357,358</sup> Future disbursements will be determined by a board assembled by BP and the Gulf of Mexico Alliance; it still remains unclear to what

<sup>355</sup> Letter from Lisa Jackson to David Rainey, BP vice president of Gulf of Mexico Exploration, attaching Addendum 3 to the "Dispersant Monitoring and Assessment Directive." (May 26, 2010).

<sup>356</sup> Letter from Chairman Edward J. Markey to Admiral Thad Allen (July 30, 2010. Available at <http://markey.house.gov/docs/07-30-10ejmtocgdispersants.pdf>.

<sup>357</sup> BP, p.l.c., (2010) Available at: <http://www.piersystem.com/go/doc/1927/910403>.

<sup>358</sup> Schenkman, Lauren (2010) BP Releases Long-Awaited Plan for \$500 Million for Gulf Research. Available at <http://news.sciencemag.org/scienceinsider/2010/09/bp-releases-long-awaited-plan-fo.html>.

extent grants will be awarded on the basis of scientific merit versus geographic proximity to the spill.<sup>359</sup>

## II. ACCOMPLISHMENTS

### INTRODUCTION

The 111th Congress—and particularly the House of Representatives—was intensely active in addressing energy security and climate change. As detailed below, the American Recovery and Reinvestment Act, passed by Congress, established the largest public investment in clean energy technology in history. The House passed historic comprehensive energy and climate legislation, a major bill responding to the BP oil spill, and an array of bills addressing other energy security and climate-related issues. The Select Committee played a substantial role in each of these legislative efforts.

Collectively, they represent a broad vision of energy and climate solutions that have been a major focus of the Select Committee's work. During the same period, the United States under the Obama Administration returned to a leadership role in the international climate negotiations, resulting in some significant initial steps forward, as discussed below.

### AMERICAN RECOVERY AND REINVESTMENT ACT

The American Recovery and Reinvestment Act (ARRA) was enacted on February 17, 2009. This legislation was a direct response to the economic crisis, intended to preserve and create jobs, promote economic recovery, and assist those most impacted by the recession, in large part through the provision of needed investments in infrastructure and technology that will also generate long-term economic benefits. The bill included \$288 billion in tax cuts and benefits for families and businesses; \$224 billion in increased federal funding for education, healthcare, and extended unemployment benefits; and \$275 billion in federal contracts, grants and loans.

Roughly \$90 billion, or 11 percent, of ARRA investments targeted clean energy and energy efficiency initiatives, such as tax credits, grants, loan guarantees, and other programs for energy efficiency, electricity generation from renewable sources, electric grid modernization, advanced vehicles and fuels technology, traditional mass transit and high-speed rail, carbon capture and sequestration, green innovation and job training, and clean energy equipment manufacturing. Collectively, this represents the largest public investment in clean energy technology in history.

As of July 2010, two-thirds of appropriated ARRA funds had been obligated and more than one-quarter had been spent. The Council of Economic Advisers (CEA) estimates this public investment has already saved or created more than 800,000 jobs, with 190,000 of those occurring in the clean energy category. CEA also reports that ARRA clean energy funds have been successful in leveraging private investment. For example, the Energy Cash Assistance Program has disbursed \$4.7 billion, supporting over \$13

<sup>359</sup>Schenkman, Lauren (2010) BP Releases Long-Awaited Plan for \$500 Million for Gulf Research. Available at <http://news.sciencemag.org/scienceinsider/2010/09/bp-releases-long-awaited-plan-fo.html>.

billion in total investment activity, and the Smart Grid Program has leveraged \$6 billion in outside investment with their initial investment of \$4.5 billion.<sup>360</sup>

Both demand for ARRA programs and the impact they are making are significant. For example, the \$14 billion in competitive grants that the Department of Energy is now distributing are oversubscribed with projects, with only one in five applications receiving an award.<sup>361</sup> ARRA clean energy programs are putting the United States on track to double non-hydro renewable electricity generating capacity and double advanced energy equipment manufacturing by 2012.<sup>362</sup> In 2009, a year in which many were forecasting declines in renewable deployments, the wind industry grew its total installed capacity nearly 40 percent from the previous year.<sup>363</sup>

#### AMERICAN CLEAN ENERGY AND SECURITY ACT

On June 26, 2009, the U.S. House of Representatives passed the American Clean Energy and Security Act (H.R. 2454), also known as the “Waxman-Markey” bill. This is the first and only comprehensive legislation to combat climate change to be passed by a full chamber of Congress in the United States. If enacted, the Waxman-Markey bill would create millions of new clean energy jobs, enhance America’s energy independence, and protect the environment—all without increasing the federal deficit.<sup>364</sup>

The bill would unleash private sector investment in clean energy to create millions of new jobs that can’t be shipped overseas. One recent study concluded that H.R. 2454 and the American Recovery and Reinvestment Act would together create 1.7 million new clean energy jobs.<sup>365</sup> The energy efficiency provisions of the Waxman-Markey bill alone would generate 770,000 jobs by 2030.<sup>366</sup> The bill would also protect America’s current jobs by helping energy-intensive industries like the steel, iron, and paper industries transition to a cleaner, more profitable future.

To enhance America’s energy independence, the Waxman-Markey bill promotes all forms of American clean energy. The bill would make a landmark investment in the future of the country by providing \$190 billion through 2025 to increase our efficiency and deploy cutting-edge technologies, such as carbon capture and sequestration, renewable energy, and electric and other advanced technology vehicles. As a result, enactment of the bill would cut America’s use of foreign oil by more than 5 million barrels per day in 2030—as much as we currently import from the Middle East and

<sup>360</sup> Council of Economic Advisers. *The Economic Impact of the American Recovery and Reinvestment Act of 2009. Fourth Quarterly Report.* (Jul 14, 2010) Available at <http://www.whitehouse.gov/administration/eop/cea/factsheets-reports/economic-impact-arr-4th-quarterly-report/summary>.

<sup>361</sup> Rogers, Matthew. Testimony for U.S. Senate Energy and Natural Resources Committee Hearing: *To examine the Department of Energy’s implementation of programs authorized and funded under the American Recovery and Reinvestment Act of 2009.* (March 4, 2010).

<sup>362</sup> *Id.*

<sup>363</sup> Mouawad, Jad. *Wind Power Grows 39% for the Year.* New York Times. (January 26, 2010). Available at <http://www.nytimes.com/2010/01/26/business/energy-environment/26wind.html>.

<sup>364</sup> The Congressional Budget Office estimates that H.R. 2454 would raise federal revenues by \$873 billion over ten years and increase direct spending by \$864 billion, resulting in a net \$9 billion reduction in the federal budget deficit.

<sup>365</sup> Center for American Progress, *The Economic Benefits of Investing in Clean Energy* (June 2009) Available at [http://www.americanprogress.org/issues/2009/06/pdf/peri\\_report.pdf](http://www.americanprogress.org/issues/2009/06/pdf/peri_report.pdf).

<sup>366</sup> American Council for an Energy-Efficient Economy, *Savings Estimates for Jobs Bill*, (2010) available at [http://www.aceee.org/energy/national/Jobs\\_Analysis\\_0309.pdf](http://www.aceee.org/energy/national/Jobs_Analysis_0309.pdf).

Venezuela—when combined with vehicle efficiency and biofuels standards enacted in 2007 and updated by President Obama.

To protect the environment, the Waxman-Markey bill would limit global warming emissions from electric utilities, oil refineries, and other major sources, and reward companies as they use cleaner technology. The bill would reduce total global warming emissions 83 percent below 2005 levels by 2050. According to the World Resources Institute, the bill would slash global warming pollution by 2,265 million metric tons in the year 2020 alone.<sup>367</sup>

The Waxman-Markey bill enjoyed support from a broad range of stakeholders, including representatives of industry, labor, environment, and faith groups, and the bill was careful to protect consumers from higher energy prices. In fact, the American Council for an Energy Efficient Economy concluded that the energy efficiency provisions in the bill would save consumers \$1050 per household by 2020.<sup>368</sup>

Unleashing a U.S.-led clean energy revolution and cutting U.S. global warming pollution remains critical unfinished business and should be among the top priorities of the new Congress and the Administration. The Waxman-Markey bill remains the most comprehensive and detailed roadmap established to date, and should be a touchstone for future efforts in this sphere.

#### GULF OIL SPILL LEGISLATION

In response to the BP oil spill in the Gulf of Mexico, discussed at length above, the House enacted broad legislation to hold BP and other parties fully accountable for the spill, to help restore the Gulf, and to reform offshore oil and gas drilling to ensure that a spill of this kind never happens again.

On July 30, 2010, the House passed the Consolidated Land Energy and Aquatic Resources (CLEAR) Act (H.R. 3534). This legislation includes the following elements:

- Strong new safety measures, including independent certification of critical offshore drilling equipment.
- Removal of the \$75 million cap on economic damages to be paid by companies like BP and other responsible parties to families and businesses harmed by an oil spill.
- Elimination of the scandal-ridden Minerals Management Service; establishment of a new structure within the Department of Interior for offshore oil and gas leasing, revenue collection, and safety and environmental regulation; and establishment of tougher ethics standards for Federal officials overseeing offshore drilling.
- Strengthening of the President's Commission on the Deep-water Horizon spill by giving the Commission subpoena power to ensure cooperation in its investigation. This portion of the legislation was introduced by Rep. Lois Capps and Chairman Markey as H.R. 5481.
- Closing of the royalty loopholes that allow oil companies to drill for free on public lands during times of high oil prices, saving American taxpayers up to 53 billion. This provision was

<sup>367</sup> World Resources Institute, *Emissions Reductions Under the American Clean Energy and Security Act* (May 19, 2009) Available at <http://www.wri.org/publication/usclimatetargets>.

<sup>368</sup> American Council for an Energy-Efficient Economy, *Savings Estimates for Jobs Bill*, (2010) available at [http://www.aceee.org/energy/national/Jobs\\_Analysis\\_0309.pdf](http://www.aceee.org/energy/national/Jobs_Analysis_0309.pdf).

introduced by Chairman Markey and has passed the House multiple times.

- Establishment of a Gulf of Mexico Restoration Program to coordinate efforts to return the Gulf to health following the spill, and measures to ensure that a portion of the fees from offshore drilling are used to protect and improve our oceans.
- Provisions to ensure full funding, using offshore oil and gas drilling fees, for the Land and Water Conservation Fund and the Historic Preservation Fund, which help protect high quality natural, recreational, and historical areas.

The CLEAR Act built on other legislation separately passed by the House, including:

- Legislation, co-sponsored by House Education and Labor Committee Chairman George Miller and Chairman Markey, to protect whistleblowers working on offshore oil and gas drilling operations (H.R. 5851—the Offshore Oil and Gas Whistleblower Protection Act).
- Legislation to ensure fair compensation to the families of those killed or injured in the BP spill (H.R. 5503—the Securing Protections for the Injured from Limitations on Liability (SPILL) Act).
- Legislation supporting research and development of new technologies and practices for the prevention and cleanup of oil spills (H.R. 5716, the Safer Oil and Natural Gas Drilling Technology Research and Development Act; H.R. 2693, the Oil Pollution Research and Development Program Reauthorization Act).

Although the Obama Administration has taken a number of critical steps to address these issues, many of the elements of this House-passed legislation should remain key priorities for the next Congress.

#### CASH FOR CLUNKERS

On June 24, 2009, President Obama signed into law legislation originally passed in the House as the “Consumer Assistance to Recycle and Save Act of 2009,” authorizing the creation of the successful “Cash for Clunkers” program. The framework for this legislation had previously been negotiated, as part of the American Clean Energy and Security Act, by Democratic Members of Congress led by Chairman Markey, Energy and Commerce Committee Chairman Henry Waxman, and Reps. Betty Sutton, Jay Inslee, John Dingell, and Bart Stupak.

Under this legislation, Congress ultimately provided \$3 billion in funds to encourage consumers to trade in their old gas-guzzler for a new, more fuel efficient vehicle, thereby reducing our dangerous dependence on imported oil, saving consumers money at the gas pump and providing meaningful assistance to get the struggling American auto industry back on its feet. The program provided consumers purchasing qualifying new vehicles with \$3,500–\$4,500 vouchers, in connection with the purchase of almost 700,000 new vehicles.

These new vehicles:

- Averaged about 9.2 miles per gallon (about 60 percent) more efficient than the gas guzzlers that were traded in, far

exceeding the minimum fuel efficiency requirements imposed by the legislation.

- Are estimated to reduce the need for 33 million gallons of gasoline annually.
- Are estimated to reduce GHG emissions by 9 million metric tons over the next twenty-five years.

The program was also estimated to have created or saved more than 60,000 jobs and added \$3.8–\$6.8 billion to the GDP.

#### HOMESTAR—CREATING JOBS THROUGH BUILDING ENERGY EFFICIENCY RETROFITS

On May 4, 2010, the House passed the HomeStar Energy Retrofit Act of 2010 (H.R. 5019) to address the issues of job creation in the construction sector and building energy efficiency. Similar to the “Cash for Clunkers” program, this legislation would authorize the establishment of a national rebate program to encourage homeowners to improve home energy efficiency through measures such as installation of new insulation, more efficient windows and doors, and so on.

Under the program, homeowners can participate in either a “Silver Star” program that provides rebates for a pre-approved list of specific energy-saving measures, or the “Gold Star” program that provides rebates for whole-home retrofits that achieve at least a 20 percent increase in the overall energy efficiency of the home.

If funded at the authorized level of \$6 billion, the HomeStar program would create or save 168,000 jobs—helping to address high unemployment rate in the construction industry, which is near 25 percent.<sup>369</sup> Ninety percent of the retrofit products that would be purchased under the program are made in the United States, such that it would also provide a much-needed stimulus for domestic manufacturing.<sup>370</sup> The program would also save homeowners \$9.2 billion on energy bills, and would save an amount of electricity equivalent to the output of four 300 megawatt power plants and an amount of natural gas and home heating oil equivalent to 6.8 million barrels of home heating oil.<sup>371</sup>

#### THE GRID ACT—SECURING AMERICA’S ELECTRICITY GRID

Another critical issue addressed by the House of Representatives during the 111th Congress is the security of America’s electric grid—a key element of America’s energy security. Right now, America’s electric grid is vulnerable to cyber or other attacks by terrorists or hostile countries. Our adversaries are actively probing these weaknesses and already have the capacity to exploit them. The consequences of such an attack could be devastating. The commercially operated grid provides 99 percent of the power used by our defense facilities. Every one of our Nation’s critical civilian systems—water, communications, healthcare, transportation, law enforcement, and financial services—depends on the grid. Classified

<sup>369</sup> American Council for an Energy-Efficient Economy, *Savings Estimates for Jobs Bill*, (2010) available at [http://www.aceee.org/energy/national/Jobs\\_Analysis\\_0309.pdf](http://www.aceee.org/energy/national/Jobs_Analysis_0309.pdf).

<sup>370</sup> New York Times, *Made in the U.S.A.: Efficiency Materials*, (March 12, 2010) Available at <http://green.blogs.nytimes.com/2010/03/12/made-in-the-u-s-a-efficiency-materials/>.

<sup>371</sup> American Council for an Energy-Efficient Economy, *Savings Estimates for Jobs Bill*, (2010) available at [http://www.aceee.org/energy/national/Jobs\\_Analysis\\_0309.pdf](http://www.aceee.org/energy/national/Jobs_Analysis_0309.pdf).

Member briefings convened by Chairman Markey during the 111th Congress underscored the urgency of this threat.

On June 9, 2010, the House passed—by unanimous voice vote—H.R. 5026, the Grid Reliability and Infrastructure Defense (GRID) Act, sponsored by Chairman Markey and Rep. Fred Upton. This bipartisan legislation would establish critical new Federal authority to protect the Nation’s electric grid against a range of threats and vulnerabilities—including cyber attacks, electromagnetic weapons, solar storms, and the supply of critical large transformers produced exclusively overseas. Without the establishment of this new authority, the Federal government has limited authority to protect the grid. This remains a front-burner issue for the next Congress.

### *International Negotiations*

The past two years have seen substantial new developments with regard to international climate negotiations. With more than 120 heads of government in attendance, the United Nations Climate Change Summit in Copenhagen in December 2009 was the largest meeting of world leaders in history. Speaker Nancy Pelosi led a high-profile, bipartisan delegation of 21 Members of the House of Representatives, including Majority Leader Steny Hoyer, Chairman Markey and four other Chairmen of House Committees, to attend the summit.

President Obama and other world leaders gathered at the Copenhagen summit reached a significant new agreement known as the Copenhagen Accord. This Accord, which has now been signed by 140 countries, including those accounting for the vast majority of global greenhouse gas emissions, provides for explicit emission pledges by all the major economies. It also outlined an aspirational goal of limiting global temperature increase to 2 degrees Celsius and broad terms for the reporting and verification of countries’ actions.<sup>372</sup> For the first time, the United States, China and other major emitters committed to strong reductions in greenhouse gas emissions on a national level.

The Copenhagen Accord also included an unprecedented commitment of funds for global adaptation and mitigation. The United States and other developed countries made a collective commitment of \$30 billion in 2010–2012 to help developing countries reduce emissions, preserve forests, and adapt to climate change, and a goal of mobilizing \$100 billion a year in public and private finance by 2020 to address developing country needs. The United States, the world’s second largest greenhouse gas emitter, committed to 17 percent below 2005 levels by 2020, 42 percent below 2005 levels by 2030, and 83 percent below 2005 levels by 2050. These targets are aligned with the ACES legislation passed by the House of Representatives.<sup>373</sup>

At the 16th Conference of the Parties to the UN Framework Convention on Climate Change in Cancun, Mexico in December 2010, the international community took another important step forward

<sup>372</sup>United Nations Framework Convention on Climate Change, *Report of the Conference of the Parties on its fifteenth session, held in Copenhagen from 7 to 19 December 2009*. Available at [http://unfccc.int/documentation/documents/advanced\\_search/items/3594.php?rec=j&prirref=600005735#beg](http://unfccc.int/documentation/documents/advanced_search/items/3594.php?rec=j&prirref=600005735#beg).

<sup>373</sup>United Nations Framework Convention on Climate Change, *Submission of the United States of America, Organization of Work of the AWG/LCA in 2010* (February 26 2010) Available at [http://unfccc.int/files/meetings/ad\\_hoc\\_working\\_groups/application/pdf/usawp2010\\_lca.pdf](http://unfccc.int/files/meetings/ad_hoc_working_groups/application/pdf/usawp2010_lca.pdf).



through the establishment of the Cancun Agreements. These agreements make substantial progress in implementing all of the major pillars of the Copenhagen Accord, including Mitigation, Monitoring, Reporting and Verification and International Consultation and Analysis (MRV/ICA), Adaptation, Finance, Technology, and Reduced Emissions from Deforestation and Degradation (REDD).<sup>374</sup>

Notably, the agreements “anchor” the emission reduction pledges made by major developed and developing countries under the Copenhagen Accord in a new decision of the Conference of the Parties and confirm the climate financing pledges made by developed countries. Further, major developing countries agreed to take a substantial step forward in establishing an international regime to ensure transparency in measuring, reporting and verifying their compliance with emission reduction pledges, including through periodic international consultation and analysis.

### CONCLUSION

In April of 2007, the Select Committee on Energy Independence and Global Warming held its first hearing. At that inaugural gathering, the Select Committee discussed the twin challenges of climate change and our dependence on foreign oil.

Since that day, Congress passed historic improvements in vehicle fuel economy standards and made major investments in clean energy technologies, including renewable energy, electric vehicle, and advanced battery technologies as well as building and appliance efficiency measures that will save families and small business billions of dollars. The House passed a comprehensive energy and climate bill. America held two historic national elections. The world—including China and India—committed to reduce carbon pollution in the Copenhagen Accord and the Cancun Agreements. U.S. troops continue to fight bravely in Iraq and Afghanistan, regions where our energy and national security interests remain entangled. The Gulf of Mexico was sullied by BP’s oil spill, which became the worst environmental disaster in U.S. history. The Select Committee has been a central forum for discussion and debate of all these issues.

Over the life of the Select Committee, the politics of energy and climate change have shifted back and forth as have the issues that dominate media and public attention. What has not changed is the array of challenges we face as a nation and as a planet.

The national security challenges from our dependence on oil are not going away. The Select Committee heard from Vice Admiral Dennis McGinn, who was a witness at the very first Select Committee hearing first hearing and at the very last Select Committee hearing. He made clear the price of our dependence on foreign oil, borne out not in this rhetorical battlefield, but in the theater of actual war, where bullets and bombs are spent to defend or acquire barrels of oil.

The national security threats from climate change are not going away. During the first Select Committee hearing, we discussed the

<sup>374</sup> See Draft Decision -/CP.16, *Outcome of the work of work of the Ad Hoc Working Group on Long-Term Cooperative Action* (December 2010) Available at [http://unfccc.int/files/meetings/cop\\_16/application/pdf/cop16\\_lca.pdf](http://unfccc.int/files/meetings/cop_16/application/pdf/cop16_lca.pdf); and Draft Decision -/CMP.6, *Outcome of the work of the Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol at its fifteenth session* (December 2010) Available at [http://unfccc.int/files/meetings/cop\\_16/application/pdf/cop16\\_kp.pdf](http://unfccc.int/files/meetings/cop_16/application/pdf/cop16_kp.pdf).

drought-influenced Somali conflict that led to the events recounted in the film “Blackhawk Down.” A warming world exacerbated a military hot spot. In September of 2010, the Select Committee hosted the Pakistani Ambassador to discuss his country’s devastating floods. He discussed how his country diverted resources like helicopters away from fighting Al Qaeda to assist in the flood response. An increasingly destabilized climate will invariably lead to more of these destabilizing geopolitical events.

The economic security threats stemming from America’s lack of an energy plan are not going away. China is pushing ahead with clean energy investments, along with other emerging technologies like carbon capture. Twice as much money was invested in clean energy in China as was invested in the United States last year. As we heard from the private investment community, this move by China will attract trillions in private capital—money that could be invested in jobs here at home.

And China is not alone. Germany, Japan, South Korea, and other countries recognize that dominating the trillion dollar market of tomorrow requires foresight and public investment, supported for forward-looking public policy, today. For the United States, second place in the clean energy race is an unacceptable goal. Just as we cannot afford to continue our dangerous dependence on foreign oil, we cannot afford to concede this economic opportunity.

The carbon pollution that we have already spewed into the atmosphere, warming our Earth, is not going away anytime soon. The pollution we emit today will still be in the atmosphere centuries from now. Every day that we wait to act to stem the tide of carbon emissions will be felt for decades and centuries to come. While some Members of Congress dispute the science of global warming, the rest of the world does not. As the world’s climate community gathered for the U.N. climate change conference in Mexico this year, virtually all the countries of the world accepted that cutting carbon pollution is this generation’s responsibility. The threat that climate change poses is too dangerous and too urgent, for us to retreat into cynicism, skepticism, or inaction.

Speaker Nancy Pelosi created the Select Committee with her grandchildren in mind, hoping to ensure that the world we leave behind is safe and prosperous and that its natural treasures remain undiminished for generations to come. The Select Committee held 80 hearings and briefings, focusing on developing solutions to end our dangerous addiction to foreign oil, combat climate change, create millions of new clean energy jobs here in the United States, and save American consumers billions in energy costs. The Committee heard testimony from a diverse group of literally hundreds of the world’s leading energy and national security experts—from military generals, energy CEOs, Nobel Prize-winning scientists, local, State, Federal and international officials, private sector investors, clean energy and environmental advocates, and entrepreneurs and innovators who are creating the next generation of clean energy technology. Collectively, these business, science, military, government, and civil society leaders made a compelling case for the urgent need for the United States to embrace a clean energy future.

In considering the future, it is instructive to keep in mind a few key numbers:

*1. \$1.3 Trillion*

That is the amount of money consumers have shipped overseas for foreign oil since the Select Committee was created in 2007. Imported oil represents nearly half of our trade deficit. This massive transfer of wealth is an albatross on our economy and boon for terrorist activities around the globe.

As long as foreign oil continues to jeopardize our national and economic security—Congress's work is not done.

*2. \$738 Billion*

That is the amount of money China plans to invest in clean energy over the next decade. This will generate jobs that should be created here in the United States. The United States has the technological advantage and the entrepreneurial spirit. But unless the United States marshalls the political will to adopt policies that will spur a clean energy revolution, we will continue to lose our innovation and manufacturing edge.

*3. \$4 Dollars.*

In the summer of 2008 that was the price of gasoline that focused this nation like a laser on finding alternatives to oil. As the global economy recovers, China and India continue to grow, and supplies remain tight, it is inevitable that these prices will return. The United States must act to continue the transition away from oil dependence.

*4. And finally, the number 1*

We have one planet. We all share it. We are all responsible for it.

2010 is on track to be the hottest year on record, following the warmest decade on record. We have heard the warnings from scientists. We have seen the damage with our own eyes.

Someday, our children and grandchildren will look back on the record of the Select Committee. That record will reflect a respectful and rigorous debate and an unprecedented understanding of the challenges before us. Whether or not they will see that this generation has taken the bold action required by these challenges remains to be seen.



## APPENDIX A

### HEARINGS AND BRIEFINGS OF THE SELECT COMMITTEE ON ENERGY INDEPENDENCE AND GLOBAL WARMING

JANUARY 15, 2009

#### Stimulus Package and Energy: Creating Jobs, Opportunities for All

##### *Witness List:*

- Mr. Van Jones, Director, Founding President, Green For All
- The Honorable Michael Nutter, Mayor, City of Philadelphia
- The Honorable Douglas Palmer, Mayor, City of Trenton
- Denise Bode, CEO, American Wind Energy Association
- Mr. Trevor Houser, Visiting Fellow at the Peterson Institute for International Economics and Partner, Rhodium Group, LLC (RHG)
- Dr. David Kreutzer, Senior Policy Analyst in Energy Economics and Climate Change at the Heritage Foundation

FEBRUARY 4, 2009

#### Roadmap from Poznan to Copenhagen—Preconditions for Success

##### *Witness List:*

- Mr. John Bruton, Delegation of the European Commission and Ambassador to the U.S.\*
- Mr. Elliot Diringer, Vice President of International Strategies, Pew Center on Global Climate Change
- Mr. Rob Bradley, Director of the International Climate Policy Initiative, World Resources Institute
- Ms. Karen Alderman Harbert, President and CEO, Institute for 21st Century Energy

FEBRUARY 25, 2009

#### Get Smart on the Smart Grid: How Technology Can Revolutionize Efficiency and Renewable Solutions

##### *Witness List:*

- Mr. Allan Schurr, Vice President, IBM
- Mr. Robert Gilligan, Vice President, General Electric
- Mr. Tom Casey, CEO, CURRENT Group, LLC
- Ms. Shirley Coates Brostmeyer, CEO, Florida Turbine Technologies, Inc.

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\*Mr. Bruton's testimony was presented in a briefing format and immediately following his testimony the formal hearing commenced.

- Mr. Charles Zimmerman, Vice President, Wal-Mart
- Mr. James Hoecker, Hoecker Energy Law & Policy

MARCH 2, 2009

Briefing: Youth Climate: Green Jobs, Clean Futures

*Witness List:*

- Ms. Jessy Tolkan

MARCH 4, 2009

Preparing for Copenhagen: How Developing Countries Are Fighting Climate Change

*Witness List:*

- Mr. Carter Roberts, President and CEO, World Wildlife Fund (WWF)
- Ms. Barbara Finamore, China Program Director, Natural Resources Defense Council (NRDC)
- Mr. Ned Helme, President, Center for Clean Air Policy (CCAP)
- Mr. Lee Lane, Resident Fellow, American Enterprise Institute (AEI)

MARCH 19, 2009

Constructing a Green Transportation Policy: Transit Modes and Infrastructure

*Witness List:*

- Mr. Peter Varga, CEO, Interurban Transit Partnership, Grand Rapids, Michigan
- Mr. Andy Clark, Executive Director, League of American Bicyclists
- Mr. Chris Zimmerman, Arlington County, Virginia Board Member
- Mr. John Boesel, President and CEO, CalStart

JUNE 18, 2009

Global Warming's Growing Concerns: Impacts on Agriculture and Forestry

*Witness List:*

- Mr. Jerry Hatfield, Supervisory Plant Physiologist, USDA
- Ms. Heather Cooley, Senior Researcher, Pacific Institute
- Mr. Tom Troxel, Director, Black Hills Forest Resource Association
- Dr. Johannes Lehmann, Associate Professor of Soil Fertility Management/Soil Biogeochemistry, Cornell University
- Mr. Ford B. West, President, The Fertilizer Institute

JULY 28, 2009

New Technologies: What's Around the Corner

*Witness List:*

- Dr. Greg Kunkel, Vice President for Environmental Affairs, Tenaska Inc.
- Mr. Frank Smith, Chief Executive Officer, PURGeN One LLC
- Dr. Brent Constantz, Chief Executive Officer, Calera Corporation
- Dr. Emanuel Sachs, Chief Technical Officer, 1366 Technologies Inc.
- Mr. Sean Gallagher, Vice President, Tessera Solar
- Mr. Gary Spitznogle, Manager, IGCC and Gas Plant Engineering, American Electric Power

JULY 29, 2009

Climate for Innovation: Technology and Intellectual Property in Global Climate Solutions

*Witness List:*

- Mr. Govi Rao, Chairman, Lighting Science Group Corporation
- Mr. Robert T. Nelsen, Co-founder and Managing Director, ARCH Venture Partners
- Ms. Jennifer Haverkamp, Managing Director for International Policy & Negotiations, Environmental Defense Fund
- Dr. Mark Esper, Executive Vice President, Global Intellectual Property Center, U.S. Chamber of Commerce

SEPTEMBER 10, 2009

Roadmap to Copenhagen—Driving towards Success

*Witness List:*

- Mr. Todd Stern, U.S. Special Envoy for Climate Change, U.S. Department of State

SEPTEMBER 24, 2009

Solar Heats Up: Accelerating Widespread Deployment

*Witness List:*

- Dr. Stephanie A. Burns, Chairman, President and Chief Executive Officer, Dow Corning
- Mr. Frank De Rosa, Chief Executive Officer, NextLight Renewable Power
- Mr. Steve Kline, Vice President for Corporate Environmental and Federal Affairs, Pacific Gas & Electric
- Ms. Nada Culver, Esq., Senior Counsel, The Wilderness Society
- Dr. Gabriel Calzada, Economics Professor, King Juan Carlos University

OCTOBER 22, 2009

Building U.S. Resilience to Global Warming Impacts

*Witness List:*

- Mr. John Stephenson, Natural Resources and Environment, Government Accountability Office
- Mr. Eric Schwaab, Deputy Secretary of the Maryland Department of Natural Resources
- Mr. Stephen Seidel, V.P. for Policy Analysis & Gen. Counsel, Pew Center on Global Climate Change
- Kenneth Green, Resident Scholar, American Enterprise Institute

OCTOBER 29, 2010

Fraudulent Letters Opposing Clean Energy Legislation

*Witness List:*

- Representative Tom Perriello, U.S. House of Representatives
- Mr. Jack Bonner, Bonner & Associates
- Mr. Steve Miller, President and CEO, American Coalition for Clean Coal Electricity
- Ms. Lisa M. Maatz, Director of Public Policy and Government Relations, American Association of University Women
- Mr. Hilary O. Shelton, Director and Senior Vice President for Advocacy and Policy, NAACP Washington Bureau

DECEMBER 2, 2009

The State of Climate Science

*Witness List:*

- Dr. John Holdren, Director, Office of Science and Technology Policy
- Dr. Jane Lubchenco, Administrator, National Oceanic and Atmospheric Administration

MARCH 10, 2010

The Clean Energy Recovery: Creating Jobs, Building New Industries and Saving Money

*Witness List:*

- Ms. Lisa Patt-McDaniel, Director, Ohio Department of Development
- Mr. Bryan Ashley, Chief Marketing Officer, Suniva Inc.
- Mr. Paul Gaynor, Chief Executive Officer, First Wind Holdings LLC
- Ms. Mary Ann Wright, Vice President and Managing Director, Business Accelerator Project, Johnson Controls, Inc.
- Mr. Brian M. Johnson, Federal Affairs Manager, Americans for Tax Reform & Executive Director, Alliance for Worker Freedom



MARCH 16, 2010

Clearing the Smoke: Understanding the Impacts of Black Carbon Pollution

*Witness List:*

- Dr. Tami Bond, Professor, University of Illinois at Urbana-Champaign
- Dr. Veerabhadran Ramanathan, Professor, Scripps Institution of Oceanography
- Dr. Drew Shindell, Senior Scientist, NASA Goddard Institute for Space Studies
- Mr. Conrad Schneider, Advocacy Director, Clean Air Task Force

APRIL 14, 2010

The Role of Coal in a New Energy Age

*Witness List:*

- Mr. Gregory Boyce, President and Chief Executive Officer, Peabody Energy Corporation
- Mr. Steven F. Leer, Chairman and Chief Executive Officer, Arch Coal, Inc.
- Mr. Preston Chiaro, Chief Executive for Energy and Minerals, Rio Tinto
- Mr. Michael Carey, President, Ohio Coal Association

MAY 6, 2010

The Foundation of Climate Science

*Witness List:*

- Dr. Lisa Graumlich, Director, School of Natural Resources and the Environment, University of Arizona, and member of the “Oxburgh Inquiry” panel
- Dr. Chris Field, Director, Department of Global Ecology, Carnegie Institution of Washington, and co-chair of “Impacts, Adaptation and Vulnerability” portion of new IPCC report due in 2014
- Dr. James McCarthy, Professor of Biological Oceanography, Harvard University, past President and Chair of the American Association for the Advancement of Science, co-chair of “Impacts, Adaptation and Vulnerability” portion of IPCC report published in 2001
- Dr. James Hurrell, Senior Scientist, National Center for Atmospheric Research, contributor to IPCC reports
- Lord Christopher Monckton, Chief Policy Adviser, Science and Public Policy Institute

MAY 20, 2010

Climate Science in the Political Arena

*Witness List:*

- Dr. Ralph Cicerone, President of the National Academy of Sciences and Chair of the National Research Council
- Dr. Mario Molina, Nobel Laureate in Chemistry and Professor, University of California at San Diego
- Dr. Stephen Schneider, Professor, Stanford University
- Dr. Ben Santer, Research Scientist, Lawrence Livermore National Laboratory
- Dr. William Happer, Professor, Princeton University

AUGUST 10, 2010

Briefing: The Greenland Ice Sheet: Global Warming's Impacts on the Arctic Region

*Witness List:*

- Dr. Richard B. Alley, Professor of Geosciences, and Earth and Environmental Systems, The Pennsylvania State University
- Dr. Robert Bindshadler, Senior Research Scientist at University of Maryland Baltimore County, who has 30 years of service with NASA
- Dr. Andreas Muenchow, Professor of Physical Ocean Science and Engineering, University of Delaware

SEPTEMBER 16, 2010

Briefing: Progressive Auto X PRIZE: How Entrepreneurs Are Driving the Future of Jobs and Energy Security

*Witness List:*

- Dr. Peter H. Diamandis, Chairman and CEO, X PRIZE Foundation
- Mr. Oliver Kuttner, Founder and CEO, Edison2, Team Edison2 Team Leader
- Mr. Ron Cerven, Project development engineer, Li-Ion Motors Corp, Team Li-Ion Team Leader
- Mr. Jim Lorimer, US Sales Representative, 21st Century Motoring, Team X-Tracer Team Member

SEPTEMBER 22, 2010

The Global Clean Energy Race

*Witness List:*

- Mr. Mark Fulton, Global Head of Climate Change Investment Research, Deutsche Bank
- Mr. Michael Liebreich, Chief Executive, Bloomberg New Energy Finance
- Dr. Ravi Viswanathan, General Partner, New Energy Associates

- Mr. Tom Carbone, Chief Executive Officer, Nordic Wind-power

SEPTEMBER 23, 2010

Briefing: Extreme Weather in a Warming World

*Witness List:*

- Ambassador Husain Haqqani, Pakistan's Ambassador to the United States
- Dr. Michael Oppenheimer, Professor, Princeton University
- Dr. Thomas Peterson, Chief Scientist, NOAA's National Climatic Data Center
- Dr. Michael Wehner, Staff Scientist, Lawrence Berkeley National Laboratory

DECEMBER 1, 2010

Not Going Away: America's Energy Security, Jobs and Climate Challenges

*Witness List:*

- General Wesley K. Clark, US Army (Ret.), NATO Supreme Allied Commander Europe 1997–2000\*
- Vice Admiral Dennis McGinn, U.S. Navy (Ret.)
- Mr. Robert F. Kennedy, Jr., Chairman of the Waterkeepers Alliance
- Richard L. Kauffman, Chairman of the Board, Levi Strauss & Co.
- Peter Gleick, Pacific Institute for Studies in Development, Environment, and Security
- Kenneth Green, American Enterprise Institute

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\* General Clark was not able to attend the hearing but his full written testimony was included for the record.



APPENDIX B  
BP DEEPWATER HORIZON CORRESPONDENCE

| Date | Letter Description  | Response Date             |
|------|---|---------------------------|
| 5/14 | Markey to BP on spill estimate  | 5/15 BP response          |
|      |   | 5/24 BP response          |
| 5/17 | Markey to EPA on dispersants  | 5/27 EPA response         |
| 5/19 | Markey, Capps to Obama on oil spill commission recs.  |                           |
| 5/19 | Markey asks Coast Guard to post live feed   |                           |
| 5/19 | Markey asks BP to post live feed of oil leak  |                           |
| 5/21 | Markey asks BP, Halliburton, & Transocean to set up independent fund for scientists               | 6/1 Halliburton response  |
|      |   | 7/14 BP response          |
| 5/24 | Markey asks BP to make all video feeds on sea floor available                                     |                           |
| 5/25 | Markey to FDA on dispersants  | 7/28 FDA response         |
| 5/27 | Markey to BP on issues raised in Times and Journal articles                                       |                           |
| 5/31 | Markey to BP on plume denial  | 6/7 BP response           |
| 5/31 | Markey asks BP to make video feeds available, again   | 6/14 BP response          |
| 6/6  | Markey to BP on clarification of total amount of oil coming from the well                         | 6/14 BP response          |
| 6/8  | Markey asks BP release archived video to Flow Rate Technical Group & him                          |                           |
| 6/10 | Markey asks BP to let scientists directly measure spill   | 6/13 BP response          |
| 6/13 | BP answers to pre-hearing questions for hearing 6/15  |                           |
| 6/14 | Markey, Capps letter on subpoena power to chairs  |                           |
| 6/14 | Markey, Capps asks BP for more info on enviro issues of the spill, etc.                           | 7/23 BP response          |
| 6/18 | Markey to Hayward on BP's claim of no sub-surface plumes  | 7/2 BP response           |
| 6/23 | Markey asks BP about relief well prospects  | 7/2 BP response           |
|      |   | 7/9 BP response           |
| 6/24 | Markey to Coast Guard on dispersants  | 7/12 Coast Guard response |
| 6/24 | Markey to EPA on dispersants  | 8/05 EPA response         |
| 6/24 | Markey asks BP for video and details of 6/23 cap accident   |                           |
| 6/28 | Markey, Waxman, Stupack ask ConocoPhillips if they are going to revise their oil response program |                           |
| 6/28 | Markey, Waxman, Stupack ask Chevron if they are going to revise their oil response program        |                           |
| 6/28 | Markey, Waxman, Stupack ask Shell if they are going to revise their oil response program          |                           |
| 6/28 | Markey, Waxman, Stupack ask Exxon if they are going to revise their oil response program          |                           |
| 6/30 | Markey to BP on oil spill clean up and Hurricane Alex plans                                       | 7/21 BP response          |
|      |   | 7/23 BP response          |
| 7/1  | Markey, Melacon to GSA on trailers  |                           |
| 7/2  | Markey, Melacon to FTC on trailers  | 7/29 FTC response         |
| 7/8  | Markey asks BP about discrepancies in relief well dates, worse-case scenario figures              |                           |
| 7/13 | Markey asks Hayward to release info about condition of the wellbore & seafloor leaks              | 7/15 BP response          |

|       |  |                                    |
|-------|--|------------------------------------|
| 7/13  | Markey asks FDA for arsenic and oil monitoring info                                | 9/16 FDA response                  |
| 7/13  | Markey asks Coast Guard about integrity of the wellbore                            |                                    |
| 7/14  | Markey asks BP to collect 100% of oil flowing from well for limited period of time | 7/16 BP response                   |
| 7/18  | Markey letter to Coast Guard on oil spill  |                                    |
| 7/20  | Markey to BP and Coast Guard on "Bullhead Kill" technique                          |                                    |
| 7/21  | <i>BP on Hayward's 6/17 testimony</i>  |                                    |
| 7/26  | Markey to BP on Hayward severance package  |                                    |
| 7/30  | Markey to Coast Guard on letting BP continue to use dispersants                    | 8/02 Coast Guard response          |
|       |  | 10/01 Coast Guard response         |
| 8/11  | Markey to BP: own up to flow rate and compensate the Gulf                          | 8/24 BP response                   |
| 8/16  | Markey asks Dudley to testify before Congress                                      | 9/3 BP response                    |
| 8/17  | Markey to BP about independent science fund  | 9/17 response                      |
| 9/28  | Markey to Bipartisan National Commission on the spill                              | 10/08 National Commission response |
| 9/29  | Markey, Capps to Senate Republicans: stop providing cover to BP                    |                                    |
| 10/1  | Markey asks Dudley to testify before Congress, again                               |                                    |
| 10/27 | Markey asks Dudley to testify again  | 11/3 Dudley response               |
| 11/12 | Markey asks Dudley to testify again  |                                    |
| 12/8  | Markey, Capps to National Oilwell Varco  |                                    |

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 MICHAEL C. BURGESS, TEXAS  
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 PHIL GINGREY, GEORGIA  
 STEVE SCALISE, LOUISIANA

May 14, 2010

Mr. Lamar McKay  
 President and CEO  
 BP America, Inc.  
 501 WestLake Park Boulevard  
 Houston, Texas 77079

Dear Mr. McKay:

BP's current estimate for the amount of oil flowing into the Gulf of Mexico from the Deepwater Horizon spill is 5,000 barrels per day. BP's initial estimate for the amount of oil flowing into the gulf was 1,000 barrels per day. At a briefing provided to members of the Energy and Environment Subcommittee of the Energy and Commerce Committee, Mr. Dave Rainey of BP indicated that a maximum flow from the well, if uncontrolled, would be approximately 60,000 barrels per day, with a midrange estimate of 40,000 barrels per day from an uncontrolled release. At the hearing of the Subcommittee on Oversight and Investigations, on May 11, you reaffirmed the 5,000 barrels per day estimate.

Recent news reports indicate that the actual amount of oil being released into the Gulf of Mexico could be upwards of 70,000 barrels per day. As reported by National Public Radio, an independent scientific analysis concluded that, with a plus or minus 20 percent accuracy rate, the flow could range from 56,000 barrels per day, up to 84,000 barrels per day. Other estimates reported in the media also indicate that the well could be releasing 4 to 5 times as much oil as is currently being reported.

The public needs to know the answers to very basic questions: how much oil is leaking into the Gulf and how much oil can be expected to end up on our shores and our ocean environment? I am concerned that an underestimation of the flow may be impeding the ability to solve the leak and handle management of the disaster. We have already had



one estimate that grossly underestimated the amount of oil being released and we cannot afford to have another.

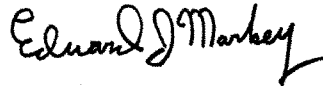
I would therefore ask that you answer the following questions and provide any requested documents within the next 24 hours. You are requested to update your response or provide additional documents at such time as such information becomes available.

- 1) Prior to the incident, did BP already have an estimate of the maximum amount of oil that could be expected to flow from this well under normal conditions?
- 2) What was the basis for this estimate?
- 3) Please provide all documents that relate to the amount of oil that could be expected to flow from this well, including any estimates of profits that this well was projected to generate.
- 4) What is the BP method and scientific basis for the estimate of 5,000 barrels per day? Was this estimate based solely on surface monitoring of the size of the spill?
- 5) Were all or any of the latest methods that are available today for estimating the amount of such a spill employed?
- 6) Please provide all documents created since the incident occurred that bear on, or relate to, in any way, estimates of the amount of oil being released.
- 7) What is the basis, if any, for the worst case estimate of approximately 60,000 barrels per day provided to the Energy and Commerce Committee during a May 4<sup>th</sup> briefing?
- 8) Was BP, as has been reported in the press, offered an opportunity to use the latest technology for estimating the volume of oil flowing from the pipe?
- 9) Did BP accept or refuse any such offers and has BP used the latest technology to estimate the volume of oil flowing from the well?
- 10) Has BP used any subsurface technology to estimate the amount of oil flowing from the well? If so, please provide the results of any such efforts.
- 11) Is it accurate to suggest as BP Vice President Kent Wells did recently that "There's just no way to measure it?" If so, then does BP stand behind the current estimates of the amount of oil flowing or not?

- 12) Could an increased flow from the riser pipe affect proposed or attempted efforts to stop the flow of oil, such as the failed containment dome strategy, the so called "junk shot" strategy, attempts to place an additional pipe into the riser, and the drilling of relief wells for plugging the well bore?
- 13) Please indicate for the record BP's current estimate of the amount of oil flowing from the well and provide the basis and methodology for that estimate, along with any uncertainty or error ranges for the estimate.
- 14) BP has suggested in press reports that it is focused on closing the leak, rather than in measuring it. Are efforts to close the leak inconsistent with efforts to measure its volume? Why wouldn't such efforts actually be complementary?
- 15) Using estimates of 5,000 barrels per day, 40,000 barrels per day and 70,000 barrels per day, and further assuming that the leak continues for another 60 days, what is the projected extent of the spill in square miles and the amount of Gulf coastline in miles that would potentially be affected by such a spill?

If you have any questions please contact Morgan Gray of my staff at 202-225-4012.

Sincerely



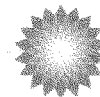
Edward J. Markey  
Chairman  
Subcommittee on Energy and Environment  
Committee on Energy and Commerce

CC: Chairman Henry Waxman  
Ranking Member Joe Barton  
Ranking Member Fred Upton



David C. Nagel

Executive Vice President  
BP America Inc.



BP America Inc.  
1101 New York Avenue, NW  
Suite 700  
Washington, DC 20005

Direct (202) 457-6581  
Main (202) 785-4888  
Fax (202) 457-6597

May 15, 2010

**BY HAND DELIVERY**

The Honorable Edward J. Markey  
Subcommittee on Energy and Environment  
Committee on Energy and Commerce  
United States House of Representatives  
2125 Rayburn House Office Building  
Washington, D.C. 20515-6115

**Re: Response to Chairman Markey's Correspondence to BP America, Inc. Dated  
May 14, 2010**

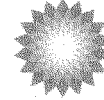
Dear Chairman Markey:

I am writing on behalf of BP America, Inc. ("BPA") in response to your May 14, 2010 letter to Mr. Lamar McKay. We want to be fully cooperative with the Subcommittee. We are working as diligently and expeditiously as possible, concurrently with our response efforts, to respond to yesterday's request for information and documents. We will respond to your request on a rolling basis as expeditiously as possible.

We appreciate the Subcommittee's consideration of the unique and urgent circumstances in which we are operating at the present time. If you have any questions, please feel free to contact me or have your staff contact Liz Reicherts at (202) 457-6585.

Sincerely,

David C. Nagel



May 24, 2010

BY ELECTRONIC DELIVERY

The Honorable Edward J. Markey  
 Chairman  
 Subcommittee on Energy and Environment  
 Committee on Energy and Commerce  
 U.S. House of Representatives  
 2125 Rayburn House Office Building  
 Washington, DC 20515-6115

Re: Response to Chairman Markey's Correspondence, Dated May 14, 2010, to Mr. Lamar McKay, President and CEO of BP America, Inc.

Dear Chairman Markey:

I am writing on behalf of BP America, Inc. ("BPA") in response to your May 14, 2010 letter to Mr. Lamar McKay. We very much appreciate the importance of providing reliable and timely information regarding the flow of oil from the damaged wellhead in the Gulf of Mexico. With that objective in mind and in the spirit of cooperation and transparency that has informed all of our efforts to date, BPA is providing the responses below to your questions and the accompanying documents, identified by the Bates-range BP-HZN-CEC 020095 – 020107.

As you know, the estimate of 5,000 barrels per day is a Unified Command estimate, not a BP estimate. The primary methods which Unified Command has used to estimate the amount of oil flowing from the well are summarized below and in the attached materials, identified as BP-HZN-CEC 020103 - BP-HZN-CEC 020106. The range varies from about 1,000 barrels per day to roughly 15,000 barrels per day, with a best scientific guess of roughly 5,000 barrels per day – the number that Unified Command has used repeatedly and has made clear is only a rough estimate.

**1. Prior to the incident, did BP already have an estimate of the maximum amount of oil that could be expected to flow from this well under normal conditions?**

Prior to drilling, BP had prepared a production estimate for this well based on expected overall oil volume in place, expected reservoir properties, and the anticipated development concept. This concept included three (3) wells processed through a neighboring oil production facility. The rate associated with this initial well was 15,000 barrels per day.

**2. What was the basis for this estimate?**

Prior to the drilling of the Macondo well, the estimate of the maximum amount of oil that could be expected to flow from the well under normal conditions was based on interpretation and modeling from: (1) production information from other wells in the Mississippi Canyon; (2) geological information from other wells in the Mississippi Canyon; and (3) seismic data.

Hon. Edward J. Markey, Chairman  
 May 24, 2010  
 Page 2

- 3. Please provide all documents that relate to the amount of oil that could be expected to flow from this well, including any estimates of profits that this well was projected to generate.**

We have enclosed a production profile estimate for three development wells, one of which is the Mississippi Canyon 252 #1 exploration well. [BP-HZN-CEC 020107.] If you require additional information, please let us know.

- 4. What is the BP method and scientific basis for the estimate of 5,000 barrels per day? Was this estimate based solely on surface monitoring of the size of the spill?**

The estimate of 5,000 barrels per day is a Unified Command estimate, not a BP estimate. The initial work leading to this estimate was carried out by the National Oceanic and Atmospheric Administration ("NOAA"). Two approaches were used -- estimation of oil volumes on surface and estimates of velocity of the plume exiting the riser. The documentation provided by NOAA is shown at BP-HZN-CEC 020102.

- It is our understanding that NOAA estimated, through visual observation, that the volume of oil on the water on April 26 was 10,000 barrels. Using this information, a daily flow rate can be estimated as follows.
  - For this oil type, 50% of the volume is expected to evaporate or disperse naturally within hours of release.
  - Thus, 10,000 barrels on the water implies 20,000 barrels were released. (At this point in the response, negligible oil had been skimmed or dispersed, and none had been burned.)
  - The spill began when the Deepwater Horizon sank on April 22. Thus, 20,000 barrels represents four days of flow.
  - 20,000 barrels divided by four days equals 5,000 barrels per day.
- It is our understanding that, by observing the velocity of the plume exiting the end of the riser, NOAA scientists made an estimate of the flow rate at the seabed as follows.
  - Oil leaking from a hole approximately 40 cm in diameter (the Deepwater Horizon riser is 19.5"/49.5 cm ID, and is somewhat crimped at the release point).
  - By visual inspection the velocity of the material in the plume is between 7 and 30 cm per second.
  - The plume contains roughly 50% oil droplets (together with gas bubbles and entrained seawater).
  - Assuming a mid-range velocity of 15 cm per second, NOAA estimated a flow rate of 5,000 barrels per day. The associated range would be from 2,500 to 10,000 barrels per day.

Subsequent estimates of flow rate have been carried out within Unified Command and have yielded consistent results.

Hon. Edward J. Markey, Chairman  
 May 24, 2010  
 Page 3

**5. Were all or any of the latest methods that are available today for estimating the amount of such a spill employed?**

To the best of our knowledge, Unified Command has employed, and is continuing to employ, all viable methods to estimate the volume of oil flowing. We have recently learned that the U.S. Geologic Survey ("USGS") has an aircraft-mounted system known as AVIRIS (Airborne Visible/Infrared Imaging Spectrometer), which can measure the thickness of oil on water. The system has been deployed, and the data are currently being processed.

**6. Please provide all documents created since the incident occurred that bear on, or relate to, in any way, estimates of the amount of oil being released.**

We are producing documents, which can be found at BP-HZN-CEC 020095 - BP-HZN-CEC 020106, that relate to estimates of the amount of oil being released. If you require additional information, please let us know.

In addition, the federal government created a Flow Rate Technical Group ("FRTG"), comprised of members of the scientific community and government agencies, to provide further specificity on the flow rate. Consistent with its stated commitment to transparency and cooperation, BP has provided the FRTG with data showing release points and amounts of oil and gas currently being collected on the Discoverer Enterprise, as well as subsea video of the oil release to assist with FRTG's efforts.

**7. What is the basis, if any, for the worst case estimate of approximately 60,000 barrels per day provided to the Energy and Commerce Committee during a May 4th briefing?**

Prior to drilling the Mississippi Canyon 252 exploration well, an estimate of the maximum discharge from the well in the worst case scenario of an uncontrolled flow was provided as part of the permitting process. Predictions of reservoir thickness, quality and pressure were considered, in light of the well design, to develop this scenario. After the sinking of the Deepwater Horizon, that earlier estimate was reviewed in light of new data points and assumptions relating to the then-current situation, which yielded the estimated flow rate, in the worst case, of approximately 60,000 barrels per day.

**8. Was BP, as has been reported in the press, offered an opportunity to use the latest technology for estimating the volume of oil flowing from the pipe?**

Please see answer to Question 5.

**9. Did BP accept or refuse any such offers and has BP used the latest technology to estimate the volume of oil flowing from the well?**

As noted above, the Unified Command has developed the estimates regarding the rate of oil flowing from the well. It is our understanding that Unified Command has employed, and is

Hon. Edward J. Markey, Chairman  
 May 24, 2010  
 Page 4

continuing to employ, all viable technologies to estimate the volume of oil flow. We are also assisting FRTG with its efforts to provide further specificity on the flow rate.

- 10. Has BP used any subsurface technology to estimate the amounts of oil flowing from the well? If so, please provide the results of any such efforts.**

BP is not aware of any technology that reliably estimates the amount of oil flowing from the well, either subsea or subsurface.

- 11. Is it accurate to suggest as BP Vice President Kent Wells did recently that "There's just no way to measure it?" If so, then does BP stand behind the current estimates of the amount of oil flowing or not?**

Under the current circumstances, it is indeed challenging to determine the rate of oil flow with precision. No direct measurement of the flow rate at the well is feasible. That said, one can make scientifically informed estimates regarding the likely flow by observing a range of factors at sea level as well as the limited available subsea information. BP believes the Unified Command made a reasonable judgment based on the available information. In addition, BP is currently assisting FRTG with its efforts to provide further specificity on the flow rate.

- 12. Could an increased flow from the riser pipe affect proposed or attempted efforts to stop the flow of oil, such as the failed containment dome strategy, the so called "junk shot" strategy, attempts to place an additional pipe into the riser, and the drilling of relief wells for plugging the well bore?**

Yes. Flow rates have been considered in connection with all efforts to stop the flow of oil.

- 13. Please indicate for the record BP's current estimate of the amount of oil flowing from the well and provide the basis and methodology for that estimate, along with any uncertainty or error ranges for the estimate.**

The primary methods which Unified Command, and in particular NOAA, has used to estimate the amount of oil flowing from the well are summarized above in response to Question 4. The resulting calculation ranges from about 1,000 barrels per day to roughly 15,000 barrels per day, with the most scientifically-informed judgment suggesting a best guess of roughly 5,000 barrels per day. Please note that, as the Unified Command has made clear, these are only estimates.

- 14. BP has suggested in press reports that it is focused on closing the leak, rather than in measuring it. Are efforts to close the leak inconsistent with efforts to measure its volume? Why wouldn't such efforts actually be complementary?**

BP is committed to stopping the leak, containing the oil offshore as much as possible and taking proactive mitigation to protect the shoreline. Although no direct measurement of the flow

Hon. Edward J. Markey, Chairman  
May 24, 2010  
Page 5

rate at the well is feasible, the methodologies and results for inferred estimation are described in the answer to Question 4 above.

15. **Using estimates of 5,000 barrels per day, 40,000 barrels per day and 70,000 barrels per day, and further assuming that the leak continues for another 60 days, what is the projected extent of the spill in square miles and the amount of Gulf coastline in miles that would potentially be affected by such a spill?**

As the Committee undoubtedly appreciates, the situation in the Gulf of Mexico continues to be highly dynamic, and any estimate regarding the potential geographic reach of the spill or the amount of impacted coastline will depend on a range of factors that are not static, including meteorological forecasts which cannot be predicted with any degree of confidence beyond NOAA's three-day forecast.

\* \* \* \* \*

Please note that the documents that we are providing in connection with these responses contain confidential business information. BP respectfully requests that these documents be maintained confidentially and that, if the Committee or Subcommittee is considering releasing any of these documents, BP be given an opportunity to be heard on that question.

Again, thank you for the opportunity to respond to your concerns. If you have any questions, please feel free to contact me or to have your staff contact Liz Reicherts at (202) 457-6585.

Sincerely,



R. Kevin Bailey

Enclosures

cc (w/o encl.):

Chairman Henry Waxman  
Ranking Member Joe Barton  
Ranking Member Fred Upton



| Date |  | Time |  | 10:00 AM |  | 11:00 AM |  | 12:00 PM |  | 1:00 PM |  | 2:00 PM |  | 3:00 PM |  | 4:00 PM |  | 5:00 PM |  | 6:00 PM |  | 7:00 PM |  | 8:00 PM |  | 9:00 PM |  | 10:00 PM |  | 11:00 PM |  | 12:00 PM |  | 1:00 PM |  | 2:00 PM |  | 3:00 PM |  | 4:00 PM |  | 5:00 PM |  | 6:00 PM |  | 7:00 PM |  | 8:00 PM |  | 9:00 PM |  | 10:00 PM |  | 11:00 PM |  | 12:00 PM |  | 1:00 PM |  | 2:00 PM |  | 3:00 PM |  | 4:00 PM |  | 5:00 PM |  | 6:00 PM |  | 7:00 PM |  | 8:00 PM |  | 9:00 PM |  | 10:00 PM |  | 11:00 PM |  | 12:00 PM |  | 1:00 PM |  | 2:00 PM |  | 3:00 PM |  | 4:00 PM |  | 5:00 PM |  | 6:00 PM |  | 7:00 PM |  | 8:00 PM |  | 9:00 PM |  | 10:00 PM |  | 11:00 PM |  | 12:00 PM |  | 1:00 PM |  | 2:00 PM |  | 3:00 PM |  | 4:00 PM |  | 5:00 PM |  | 6:00 PM |  | 7:00 PM |  | 8:00 PM |  | 9:00 PM |  | 10:00 PM |  | 11:00 PM |  | 12:00 PM |  | 1:00 PM |  | 2:00 PM |  | 3:00 PM |  | 4:00 PM |  | 5:00 PM |  | 6:00 PM |  | 7:00 PM |  | 8:00 PM |  | 9:00 PM |  | 10:00 PM |  | 11:00 PM |  | 12:00 PM |  | 1:00 PM |  | 2:00 PM |  | 3:00 PM |  | 4:00 PM |  | 5:00 PM |  | 6:00 PM |  | 7:00 PM |  | 8:00 PM |  | 9:00 PM |  | 10:00 PM |  | 11:00 PM |  | 12:00 PM |  | 1:00 PM |  | 2:00 PM |  | 3:00 PM |  | 4:00 PM |  | 5:00 PM |  | 6:00 PM |  | 7:00 PM |  | 8:00 PM |  | 9:00 PM |  | 10:00 PM |  | 11:00 PM |  | 12:00 PM |  | 1:00 PM |  | 2:00 PM |  | 3:00 PM |  | 4:00 PM |  | 5:00 PM |  | 6:00 PM |  | 7:00 PM |  | 8:00 PM |  | 9:00 PM |  | 10:00 PM |  | 11:00 PM |  | 12:00 PM |  | 1:00 PM |  | 2:00 PM |  | 3:00 PM |  | 4:00 PM |  | 5:00 PM |  | 6:00 PM |  | 7:00 PM |  | 8:00 PM |  | 9:00 PM |  | 10:00 PM |  | 11:00 PM |  | 12:00 PM |  | 1:00 PM |  | 2:00 PM |  | 3:00 PM |  | 4:00 PM |  | 5:00 PM |  | 6:00 PM |  | 7:00 PM |  | 8:00 PM |  | 9:00 PM |  | 10:00 PM |  | 11:00 PM |  | 12:00 PM |  | 1:00 PM |  | 2:00 PM |  | 3:00 PM |  | 4:00 PM |  | 5:00 PM |  | 6:00 PM |  | 7:00 PM |  |
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## **Mississippi Canyon 252 #1 Flow Rate Calculations**

### **Context**

A 30 second video clip of hydrocarbons leaking from the broken end of the Deepwater Horizon drilling riser has been released to the public. Various “experts” are challenging Unified Command’s best guess estimate of flow rate at the seabed based on this video clip. This note summarizes the various estimates that have been made within Unified Command.

### **Mass Balance**

The mass balance calculation involves estimating, through visual inspection, the volume of oil on the surface of the water. Allowances are then made for natural dispersion and evaporation. Estimates of volumes skimmed, burned, and chemically dispersed then allow an estimate of the oil released at the seabed over the duration of the spill. The calculation is repeated each day weather permitting.

In the early days of the spill, the surface expression of the spill was relatively small. Overflights were able to provide fidelity with respect to the character of the oil on the surface. Three descriptors were used

- Sheen
- Dull
- Dark oil

There are two Standards for estimating the thickness of oil on water using visual descriptors.

- US-based ASTM Standard
- European-based Bonn Agreement

The visual descriptors are different in the two standards and the relationships to thickness are also different.

From April 27 through April 30 daily estimates of flow rate were made on the basis of visual description of the oil on the surface. Three estimates were made each day – low, best guess, and high – to allow for differences between the two standards, and uncertainties around the input parameters.

- Low end was always around 1,000 barrels per day
- Best guess was between 5,000 and 6,000 barrels per day
- High end varied from 12,000 to 14,000 barrels per day

The tables associated with these estimates are attached (Attachments 1-4). These estimates played an important part in Unified Command’s decision to raise the estimate of flow rate from 1,000 to 5,000 barrels per day.

During the storm which began on May 1, and for several days after, no visual description of the spill was obtained. From May 8, daily outlines of the spill have been available based on a combination of satellite and aerial overflights. However, because of the size of the spill area, overflights have been unable to provide fidelity on the visual appearance of the oil within the spill area. During the five days in April for which fidelity was available, the ratios of dark oil to dull oil to sheen remained relatively constant at 2/10/88. These ratios have been applied to the total area of spill on May 17. Current estimates of volumes of oil skimmed, burned, and chemically dispersed were then applied to provide an updated range of possible flow rates as follows: 2,000 – 6,000 – 13,000 barrels per day (Attachment 5).

Note that all serious scientists recognize that there are huge uncertainties in estimating oil volumes from visual inspection. Oil thickness is by far the greatest uncertainty, with both sheen and darker oil thicknesses varying by orders of magnitude.

#### **Maximum Discharge Calculation**

Prior to drilling the MC 252 exploration well a maximum discharge estimate was provided as part of the permitting process. Predictions of reservoir thickness, quality, and pressure were convolved with the well design to develop a worse case scenario as follows.

- Optimistic assumptions for reservoir thickness, quality, pressure, and fluid properties.
- Total loss of control of well after drilling through reservoir in largest hole size allowed by the well design – 12 ¼".
- Totally uncontrolled flow from drilling riser at surface.

Using these assumptions, a maximum case discharge of 162,000 barrels per day was estimated.

After the sinking of the Deepwater Horizon, this estimate was reviewed in the light of the actual situation as it was understood at that time.

- Formation evaluation of the reservoir interval.
- 9 7/8" hole size in the reservoir
- 7" production tubing across the reservoir
- Flow to seabed through casing annulus
- Split 5 ½" drill pipe at BOP and flow out 6 5/8" drill pipe
- No restrictions in BOP, riser, or drill pipe (ie well head open to seabed – requires BOP to fall off well head)

An absolute worst case flow rate of 60,000 barrels per day was calculated. A more reasonable worst case scenario of 40,000 barrels per day recognizes the following.

- BOP is in place and may be partially activated.
- The riser and drill pipe is crushed and kinked.

- Restrictions provided by cement in the casing annulus, formation collapse, casing hangers, etc., are likely.

This analysis is summarized on Attachment 6.

A more sophisticated version of this calculation has been carried out as more has been learned about pressures at the top and bottom of the well head. This review calculates unconstrained flow rate through the casing as well as up the annulus. Absolute worst cases with wellhead and BOP removed, and no downhole restrictions, are as follows (Attachment 7).

- Annular flow – 55,000 barrels per day
- Casing flow – 100, 000 barrels per day

#### **Fluid Velocity At Seabed**

On April 26, NOAA scientists made an estimate of volume release rate at the seabed as follows.

- Oil leaking from a hole approximately 40 cm in diameter (Deepwater Horizon riser is 19.5"/49.5 cm ID, and is somewhat crimped at release point).
- By visual inspection the velocity of the material in the plume is between 7 and 30 cm per second.
- The plume contains roughly 50% oil droplets (together with gas bubbles and entrained seawater).

The NOAA estimate using these assumptions was roughly 5,000 barrels per day (Attachment 8).

#### **Evidence Against Extreme Flow Rates At Seabed**

A Professor from Purdue University has calculated a current flow rate at the seabed of 70,000 +/- 14,000 barrels per day. He bases his estimate on the velocity of fluid exiting the drilling riser on the seabed. His estimate is unlikely to allow for the following additional factors required to estimate the flow of oil.

- Drill pipe in riser reducing flow area
- Partial crimping of riser end reducing flow area
- Proportion of gas and entrained water exiting riser with the oil
- Volume reduction of oil as gas escapes en route from seabed to surface
- Flow rate not constant

Finally, there is absolutely no evidence of any floating material being entrained in the plume exiting the broken riser. In a report to the MMS on Oil Spill Containment, Remote Sensing and Tracking For Deepwater Blowouts, PCCI Marine and Environmental Engineering made the following statement.

*"The blowout plume will make it difficult to approach the well with anything but very massive equipment pieces or ROVs. The operation of ROVs will be difficult around the blowout point. The jet zone will cause vast amounts*

*of water to flow towards the well. The danger of having lighter equipment sucked into the flow is large. Many ROVs have been rendered useless by relatively minor blowout plumes"*

ROV video shows neutrally buoyant material passing within inches of the plume without being sucked in. From this observation alone, the flow must be relatively minor.

Using Standard Guide for Visually Estimating Oil Spill Thickness on Water, ASTM F 2534 - 06.

ASTM F 2534 - 06

Oil on Water Estimate - Low

|          | sq mi | Cover Factor | gal/sq mi | gals   | bbls |
|----------|-------|--------------|-----------|--------|------|
| Sheen    | 1500  | 0.5          | 50        | 37500  | 893  |
| Dull oil | 250   | 0.2          | 666       | 33300  | 793  |
| Dark oil | 9     | 0.15         | 3330      | 4495.5 | 107  |

Total oil on water 75295 1793

x 2 to compensate for evap and disp 3586

recovered 200

chemically dispersed 1000

Total emitted 4786

Barrels emitted per day 1063

Oil on Water Estimate - Best Guess

|          | sq mi | Cover Factor | gal/sq mi | gals   | bbls |
|----------|-------|--------------|-----------|--------|------|
| Sheen    | 1500  | 0.66         | 333       | 329570 | 7849 |
| Dull oil | 250   | 0.36         | 1332      | 116550 | 2775 |
| Dark oil | 9     | 0.25         | 6660      | 14985  | 357  |

Total oil on water 461205 10981

x 2 to compensate for evap and disp 21962

recovered 450

chemically dispersed 3500

Total emitted 25912

Barrels emitted per day 5758

Oil on Water Estimate - High

|          | sq mi | Cover Factor | gal/sq mi | gals   | bbls  |
|----------|-------|--------------|-----------|--------|-------|
| Sheen    | 1500  | 0.75         | 666       | 749250 | 17839 |
| Dull oil | 250   | 0.5          | 3330      | 416250 | 9811  |
| Dark oil | 9     | 0.35         | 13320     | 41958  | 999   |

Total oil on water 1E+06 28749

x 2 to compensate for evap and disp 57498

recovered 700

chemically dispersed 6000

Total emitted 64198

Barrels emitted per day 14286

Using "Standard Guide for Visually Estimating Oil Spill Thickness on Water ASTM F 2534 - 06"

Oil on Water Estimate - Low

|          | sq ft | Cover Factor | gal/sq ft | gals  | bbls |
|----------|-------|--------------|-----------|-------|------|
| Sheen    | 1641  | 0.5          | 50        | 41025 | 877  |
| Dull oil | 235   | 0.2          | 666       | 31302 | 745  |
| Dark oil | 21    | 0.15         | 3330      | 10490 | 255  |

Total oil on water 82317 1972

|                                     |      |
|-------------------------------------|------|
| x 2 to compensate for evap and drip | 3944 |
| recovered                           | 200  |
| chemically dispersed                | 1000 |
| Total emitted                       | 5144 |
| Barrels emitted per day             | 925  |

Oil on Water Estimate - Best Guess

|          | sq ft | Cover Factor | gal/sq ft | gals   | bbls |
|----------|-------|--------------|-----------|--------|------|
| Sheen    | 1641  | 0.66         | 333       | 380659 | 8587 |
| Dull oil | 235   | 0.35         | 1332      | 109557 | 2609 |
| Dark oil | 21    | 0.25         | 6660      | 34955  | 833  |

Total oil on water 505181 12028

|                                     |       |
|-------------------------------------|-------|
| x 2 to compensate for evap and drip | 24056 |
| recovered                           | 450   |
| chemically dispersed                | 3500  |
| Total emitted                       | 28006 |
| Barrels emitted per day             | 5092  |

Oil on Water Estimate - High

|          | sq ft | Cover Factor | gal/sq ft | gals   | bbls  |
|----------|-------|--------------|-----------|--------|-------|
| Sheen    | 1641  | 0.75         | 666       | 819690 | 19516 |
| Dull oil | 235   | 0.5          | 3330      | 391275 | 9316  |
| Dark oil | 21    | 0.35         | 13320     | 97902  | 2331  |

Total oil on water 1309957 31153

|                                     |       |
|-------------------------------------|-------|
| x 2 to compensate for evap and drip | 62327 |
| recovered                           | 700   |
| chemically dispersed                | 6000  |
| Total emitted                       | 69027 |
| Barrels emitted per day             | 12650 |

Appendix 1

BP-HZN-CEC020096

Using Standard Guide for Visually Estimating Oil Spill Thickness on Water, ASTM F 2534 - 06.

#### Oil on Water Estimate - Low

|          | sq mi | Cover Factor | gal/sq mi | gals  | bbls |
|----------|-------|--------------|-----------|-------|------|
| Sheen    | 1929  | 0.5          | 50        | 48225 | 1148 |
| Oil oil  | 238   | 0.2          | 666       | 31702 | 755  |
| Dark oil | 91    | 0.15         | 3300      | 45453 | 1082 |

Total oil on water 125381 2285

x 2 to compensate for evap and disp 5971

recovered 400

chemically dispersed 1400

Total emitted 7771

Barrels emitted per day 1195

#### Oil on Water Estimate - Best Guess

|          | sq mi | Cover Factor | gal/sq mi | gals   | bbls  |
|----------|-------|--------------|-----------|--------|-------|
| Sheen    | 1929  | 0.66         | 333       | 423956 | 10094 |
| Oil oil  | 238   | 0.35         | 1392      | 110936 | 2642  |
| Dark oil | 91    | 0.25         | 6660      | 151515 | 3608  |

Total oil on water 680456 16343

x 2 to compensate for evap and disp 32687

recovered 1900

chemically dispersed 4200

Total emitted 38367

Barrels emitted per day 5906

#### Oil on Water Estimate - High

|          | sq mi | Cover Factor | gal/sq mi | gals   | bbls  |
|----------|-------|--------------|-----------|--------|-------|
| Sheen    | 1929  | 0.75         | 666       | 983356 | 22941 |
| Oil oil  | 238   | 0.5          | 3300      | 396270 | 9435  |
| Dark oil | 91    | 0.35         | 13320     | 424242 | 10191 |

Total oil on water 178406 42477

x 2 to compensate for evap and disp 84935

recovered 3000

chemically dispersed 6000

Total emitted 93935

Barrels emitted per day 14455

47746 bbls

BP-HZN-CEC020097



Oil on Water Estimate - Low

|          | sq m | Cover Factor | gal/m <sup>2</sup> | gals  | bbls |
|----------|------|--------------|--------------------|-------|------|
| Shore    | 2481 | 0.5          | 50                 | 62025 | 1477 |
| Dull oil | 160  | 0.2          | 888                | 21312 | 507  |
| Dark oil | 35   | 0.15         | 3300               | 17483 | 416  |

Total oil on water 100920 2400

x 2 to compensate for evap and disp

recovered

chemically dispersed

Total emitted

Barrels emitted per day

Oil on Water Estimate - Best Guess

|          | sq m | Cover Factor | gal/m <sup>2</sup> | gals  | bbls  |
|----------|------|--------------|--------------------|-------|-------|
| Shore    | 2481 | 0.66         | 333                | 54574 | 12833 |
| Dull oil | 160  | 0.35         | 1333               | 74592 | 1776  |
| Dark oil | 35   | 0.25         | 888                | 58725 | 1388  |

Total oil on water 678141 16146

x 2 to compensate for evap and disp

recovered

chemically dispersed

Total emitted

Barrels emitted per day

Oil on Water Estimate - High

|          | sq m | Cover Factor | gal/m <sup>2</sup> | gals   | bbls  |
|----------|------|--------------|--------------------|--------|-------|
| Shore    | 2481 | 0.75         | 688                | 129260 | 29566 |
| Dull oil | 160  | 0.5          | 1330               | 266400 | 6348  |
| Dark oil | 35   | 0.35         | 1330               | 183170 | 3855  |

Total oil on water 1598630 39734

x 2 to compensate for evap and disp

recovered

chemically dispersed

Total emitted

Barrels emitted per day

Approximate 4

BP-HZN-CEC020098

Using "Standard Guide for Visually Estimating Oil Spill Incidence on Water, ASTM F 2534 - 06."

# Oil on Water Estimate - Low

|          | sq mi | Cover Factor | gal/sq mi | gals    | bbls |
|----------|-------|--------------|-----------|---------|------|
| Shore    | 5256  | 0.5          | 53        | 131400  | 3129 |
| Dirt oil | 597   | 0.2          | 666       | 79300.4 | 1893 |
| Dark oil | 120   | 0.15         | 3330      | 59940   | 1427 |

Total oil on water 270860.4 6449

x 2 to compensate for evap and disp

12089

recovered

15838

chemically dispersed

16500

burned

5821

Total emitted

31537

Barrels emitted per day

1891

# Oil on Water Estimate - Best Guess

|          | sq mi | Cover Factor | gal/sq mi | gals     | bbls  |
|----------|-------|--------------|-----------|----------|-------|
| Shore    | 5256  | 0.66         | 333       | 1151164  | 27504 |
| Dirt oil | 597   | 0.25         | 1332      | 278321.4 | 6627  |
| Dark oil | 120   | 0.25         | 6660      | 199800   | 4757  |

Total oil on water 1633285 38888

x 2 to compensate for evap and disp

77775

recovered

31676

chemically dispersed

33000

burned

11642

Total emitted

154093

Barrels emitted per day

5707

# Oil on Water Estimate - High

|          | sq mi | Cover Factor | gal/sq mi | gals   | bbls  |
|----------|-------|--------------|-----------|--------|-------|
| Shore    | 5256  | 0.75         | 666       | 205572 | 62508 |
| Dirt oil | 597   | 0.5          | 3330      | 994005 | 23667 |
| Dark oil | 120   | 0.5          | 13320     | 599400 | 13200 |

Total oil on water 4178617 99496

x 2 to compensate for evap and disp

196971

recovered

63352

chemically dispersed

66070

burned

20284

Total emitted

351627

Barrels emitted per day

13023

## Seafloor Exit 7" x 9-7/8" Casing Annulus Flow Path

*As per 14-05-05-16*

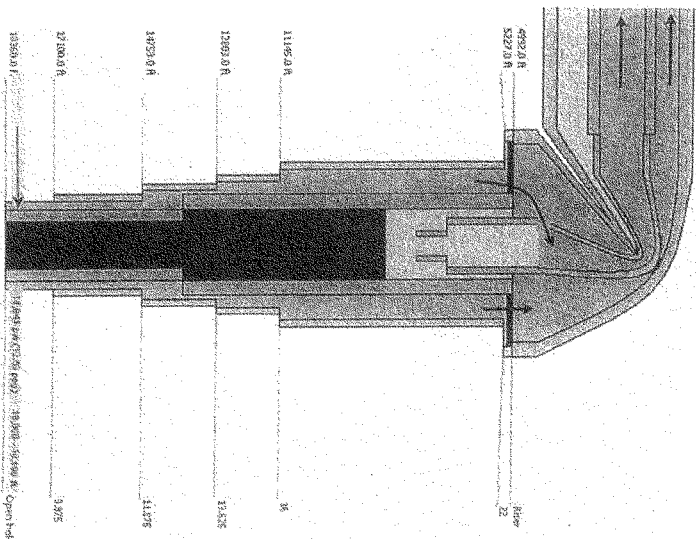
### Worst case theoretical flow assumes:

- Split 5-1/2" drill pipe at subsea BOP and flow out 6-5/8" drill pipe
- Maximum theoretical flow rate is 60,000 BOPD

### Items that reduce worst case theoretical flow:

- Crushed and bent riser and drill pipe
- Cement sheath in open hole by casing annulus
- Casing hanger and pack-off restriction
- Sand production (unconsolidated formation)
- Shale collapse
- Water production
- BOP functions activated
- Expected range of possible flow rates is 5,000 to 40,000 BOPD

**NOTE:** Removal of all restrictions (riser, BOP, and drill pipe) adds ~10,000 BOPD to rates above



BP-HZN-CEC020100

## Key Messages

ATTACHMENT 7

### Expected Case:

In the current state a wellhead pressure decrease from 3800 psi to 2270 psi (pressure seafloor) results in a flow rate increase ranging from 15% to 30%

BP-HZN-CEC020101

### Alternate Case:

If fluid flow is only through the drill pipe – and then the drill pipe is unintentionally removed and flows into the sea (2270 psi):

- For flow up the annulus the rate doubles
- For flow inside production casing the rate triples

96

### Note:

If BOP and wellhead are removed and if we have incorrectly modeled the restrictions – the rate could be as high as ~ 100,000 barrels per day up the casing or 55,000 barrels per day up the annulus (low probability worst cases)

**Estimation of the Oil Released from Deepwater Horizon Incident  
(26 April 2010, 1200hrs PDT)**

**1) Surface Oil volume Estimation**

Estimating oil volume by the visual appearance of the slick is a highly unreliable process. At best, one can calculate an answer to only an order of magnitude. Other estimation methods, if available, are likely to give more accurate answers

Oil spills separate into thick portions that can be as thick as an inch or more and thin sheen that are only as thick as a few visible light wavelengths. Most of the oil volume in a typical crude oil spill is in the thick part (but most of the area is sheen)

Much of the oil from the light crude that is being released will evaporate or disperse in the water column. We would expect at least half of the oil released to be accounted for by these mechanisms

The oil that makes it to the surface is showing signs of emulsification. Emulsified oil can contain up to 90% water.

Weathered oil that has formed tar balls are not detectable by satellites or overflights.

Based upon past experiments, published standards, and actual spills, NOAA/ERD defines the range of thickness of slicks as

Sheen thickness - ( $10^{-4} m \leftrightarrow 10^{-5} m$ )

Dark oil thickness - ( $10^{-3} m \leftrightarrow 10^{-2} m$ )

Area coverage of slick (4/26/10), based upon satellite images ( $1500 km^2 \leftrightarrow 3000 km^2$ )

→ Sheen volume, using average thickness of 0.1 micron, area of 2000 sq. km and 100% coverage yields oil volume of 200 cu. m = 1200 bbl = 50,000 gal

→ Thick oil volume, using average thickness of 100 microns, 1% average coverage and 50% water content yields an oil volume of 1000 cu. m = 6000 bbl = 0.25 million gal

→ To an order of magnitude, we estimate that there are around 10,000 bbl of oil on the water surface, or around a half million gallons

**2) Estimated Present Volume Release Rate**

The following assumptions are used to make a release rate calculation. If any of them are changed, the answer could be significantly different.

The oil is leaking, in a vertical plume from a hole approximately 40 cm. in diameter.

The velocity of the material in the plume is estimated by visual observation to be between 7 cm/sec and 30 cm/sec

The plume itself contains gas bubbles, oil droplets, and entrained seawater.

9[ Assuming that 50% of the plume volume is oil and a rise velocity of 15 cm/sec, the oil released from this source would be roughly 5000 bbl/day. (approximately 200,000 gal/day) Other sources would contribute additional oil. This answer will be refined as additional information becomes available.

HENRY A. WAXMAN, CALIFORNIA  
CHAIRMAN

JOE BARTON, TEXAS  
RANKING MEMBER

ONE HUNDRED ELEVENTH CONGRESS  
**Congress of the United States**  
**House of Representatives**  
COMMITTEE ON ENERGY AND COMMERCE  
2125 RAYBURN HOUSE OFFICE BUILDING  
WASHINGTON, DC 20515-6115

Majority (202) 225-2927  
Minority (202) 225-3641  
May 17, 2010

The Honorable Lisa Jackson  
Administrator  
U.S. Environmental Protection Agency  
Ariel Rios Building  
1200 Pennsylvania Avenue, N.W.  
Washington, DC 20460

Dear Administrator Jackson,

I write to request information regarding the use of dispersants to mitigate the effects of the catastrophic release of millions of gallons of crude oil into the Gulf of Mexico following the explosion aboard the Deepwater Horizon drilling rig. While the estimates of the amount of oil released daily has increased significantly since the explosion and remains under question, what is certain is that the inability of BP to quickly stop the leak is leading to an environmental catastrophe, placing fragile ecosystems, wildlife and the region's economy in peril. The release of hundreds of thousands of gallons of chemicals into the Gulf of Mexico could be an unprecedented, large and aggressive experiment on our oceans. It requires careful oversight by the Environmental Protection Agency (EPA) and other appropriate federal agencies.

As a measure to mitigate the impact of the oil spill, the EPA recently granted BP authorization to use chemical dispersants, which are a detergent-like brew of solvents, surfactants and other compounds that break down oil into tiny particles that then scatter and sink into the sea. To date, over half a million gallons of dispersants have been used in the Gulf of Mexico. Just two days ago, the EPA and US Coast Guard authorized BP to apply these dispersants at the site of the leak, over one mile below the ocean surface, a practice that has never been authorized before.

The information regarding the chemical composition, efficacy and toxicity of the dispersants currently being used is scarce. Additionally, recent articles<sup>1</sup> have raised questions regarding both the relative safety and efficacy of the dispersant selected for use by BP, suggesting that other

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<sup>1</sup> Less Toxic Dispersants Lose Out in BP Oil Spill Cleanup, [Greenwire](#), May 13, 2010, Spills Ills Could be Found Under the Water, [Wall Street Journal \(online\)](#), May 17, 2010

formulations may have been more suited for use in the Gulf of Mexico. In light of the volume of oil that has spewed into the Gulf of Mexico and the apparent inability of BP to quickly stop its flow, I understand that other mitigating options must be explored in order to keep as much oil as possible from reaching land. However, I am concerned about the risks and consequences, and in order to understand better what actions the EPA is taking in this area, I ask that you respond to the following questions:

1. It is my understanding that the main dispersants applied so far are from a product line called Corexit, some of which had their approval rescinded in Britain more than a decade ago<sup>2</sup>, because laboratory tests found them harmful to sea life that inhabits rocky shores.
  - a. How did EPA ensure that this dispersant's toxicity to aquatic life was evaluated?
  - b. Was its toxicity to mollusks and other sea life that inhabit the Gulf of Mexico coast evaluated, and if so, what were the results? If not, why not?
  - c. If EPA relied on toxicity studies for coastal morphologies different from that of the Gulf Coast, what was done to evaluate the applicability of those studies for the use of the dispersants in the Gulf of Mexico environment?
  - d. Was the toxicity to other subsurface aquatic life evaluated? If so, please provide details, and if not, why not?
2. How is EPA tracking the volume of dispersants being used both in both surface and subsurface applications? How does EPA plan to determine whether their use causes harm to the aquatic ecosystem they come into contact with?
3. Is EPA fully aware of all chemical constituents contained within the two formulations of Corexit dispersants currently being used? If so, please provide a list of each such constituent.
4. Did EPA ensure that tests were conducted to evaluate the efficacy and toxicity of the 18 dispersants it has approved for use? What were the results of the tests?
  - a. Did EPA rank the dispersants in terms of efficacy (in dispersing the sort of crude oil that is spewing into the Gulf of Mexico) and toxicity (to the sort of aquatic life contained in the Gulf of Mexico), as was asserted by the May 13 2010 article in *Greenwire*?<sup>3</sup> If so, please provide this ranking. If not, why not?
  - b. Does EPA instruct entities who wish to use dispersants to use the most effective and least toxic dispersants in a particular operation? If so, then did EPA instruct BP to use Corexit? If not, does EPA lack the authority to prescribe the use of specific formulations?
  - c. Does EPA expect users of dispersants to themselves examine the safety and efficacy data that is applicable to the conditions of intended use and select the least toxic and most effective approved formulation?

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<sup>2</sup> [http://www.marinemanagement.org.uk/protecting/pollution/documents/approval\\_approved\\_products.pdf](http://www.marinemanagement.org.uk/protecting/pollution/documents/approval_approved_products.pdf)

<sup>3</sup> Less Toxic Dispersants Lose Out in BP Oil Spill Cleanup, *Greenwire*, May 13, 2010

- d. Please provide copies of all documents, emails and other correspondence related to BP's use of dispersants in response to the Deepwater Horizon catastrophe.
5. How do water temperature and pressure effect the degradation of dispersants?
  - a. Will the fact that the water temperature at the Deepwater Horizon leak is just above freezing affect the time it takes for the molecules to be degraded? If so, please elaborate.
  - b. Have studies been performed to assess the efficacy or toxicity of the compounds at freezing temperatures? What are the results of these studies?
  - c. How does the high pressure at the depth of the leaking wellhead affect where chemical dispersants and oil molecules spread in the water column? Does high pressure also affect the rate of degradation of oil and chemical molecules, and if so, how?
6. What information has EPA collected about the long-term effects of dispersants accumulating in sediment at the bottom of the ocean floor? Please provide these materials to me. If no such information has been collected, then why did EPA approve their use at the ocean floor? What effect could the accumulation of large volumes of dispersants on the ocean floor have on bottom-feeding organisms such as shrimp?
7. Has EPA determined whether chemical dispersants can accumulate in the tissue of fish and other aquatic life (including plants and un-hatched eggs) in the same or similar manner as other toxic materials such as mercury? If so, please provide documentation regarding what accumulations are likely, including materials regarding the implications for human health if the fish are consumed. If not, why not?
8. Did EPA consider a variety of scenarios for the interaction of the dispersants with the oil plume when applied at the depth of the Deepwater Horizon leak? If not, why not? Did any scenarios considered include the formation of large underwater plumes at various depths, as appears to have occurred based on a preliminary scientific investigation as reported Sunday?<sup>4</sup> If so, please provide all related documents. How does EPA plan on monitoring the long-term effect that these chemical dispersants have on aquatic life in the Gulf of Mexico?
9. Is EPA aware of the ecological impacts of simultaneously using different formulations of dispersants during the mitigation efforts? Does the combination of chemicals change the toxicity or efficacy of the dispersant? If so, please provide documentation.
10. Given the start of the Atlantic hurricane season on June 1, did EPA consider the impact of the dispersants on marine life in a rapidly mixed water column should a hurricane develop in the Gulf of Mexico? If so, what did EPA determine? If not, why not?
11. EPA has stated that although it has approved the use of chemical dispersants on surface and subsurface applications it "reserves the right to halt the use of chemical dispersants at

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<sup>4</sup> Giant Plumes of Oil Forming Under the Gulf, The New York Times, May 16, 2010



any time if new data show more serious environmental harm is occurring." How is EPA monitoring environmental harm? What metrics or other problems does EPA consider to be cause for halting use of chemical dispersants?

Thank you for your assistance and cooperation in responding to this request. Should you have any questions, please have your staff contact Dr. Michal Freedhoff of the Subcommittee staff or Dr. Avenel Joseph of my staff at 202-225-2836.

Sincerely,



Edward J. Markey  
Chairman  
Subcommittee on Energy and Environment

cc: The Honorable Henry A. Waxman  
Chairman, House Energy and Commerce Committee

The Honorable Joe Barton  
Ranking Member, House Energy and Commerce Committee

The Honorable Fred Upton  
Ranking Member  
Subcommittee on Energy and Environment



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

MAY 27 2010

THE ADMINISTRATOR

The Honorable Edward J. Markey  
Chairman  
Subcommittee on Energy and Environment  
Committee on Energy and Commerce  
U.S. House of Representatives  
Washington, DC 20515

Dear Mr. Chairman:

Thank you for your May 17, 2010 letter requesting information from the U.S. Environmental Protection Agency (EPA) relating to the use of dispersants in the Gulf of Mexico following the April 20, 2010 Deepwater Horizon mobile offshore drilling unit explosion and resulting oil spill. Since these events, the Administration's efforts have focused on responding to the disaster and ensuring that BP, the responsible party, stops the discharges, removes the oil, and pays for all costs and damages. EPA is a key part of those efforts.

EPA chairs the National Response Team (NRT) and co-chairs the Regional Response Teams (RRT), comprised of several federal and state stakeholders with unique roles and responsibilities that contribute to decision-making for the oil spill response activities. Further, we share the responsibility for prevention and preparedness with USCG and several other federal agencies, including the National Oceanic and Atmospheric Administration (NOAA). EPA and USCG have a strong relationship and work closely on oil spill response activities regardless of where the spill occurs.

EPA recognizes and shares your concern regarding the use of large quantities of dispersants during operations to contain the spill. There are environmental trade-offs and uncertainties associated with the widespread use of extraordinary quantities of dispersants in general. The unprecedented nature of the continuous discharge of crude oil from a mile beneath the ocean surface, and the threat that oil poses to the Gulf's sensitive coastal ecosystem requires us to consider all options. Dispersants have been shown to be effective at breaking down the oil into small droplets that will more readily degrade in the marine environment and are an important tool, along with mechanical approaches and burning, for dealing with the oil in the ocean. At the same time, given the lack of scientific information about the impact of the dispersants in the circumstances and quantities for this release, EPA has worked closely with its federal partners to ensure an aggressive dispersant monitoring plan is implemented by BP and that data are regularly and rigorously reviewed.

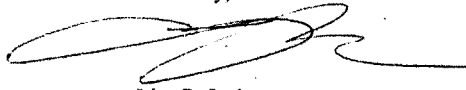
Of particular note, these efforts have resulted in significant reductions in the overall quantity of dispersants being used. The authorization of the use of dispersants subsea, where it is being applied directly to the oil at the principle leak site, has made it possible to reduce the use of surface application. Surface application is now being used as a last resort and only with specific written authorization from the Coast Guard.

EPA is responsible for maintaining the National Contingency Plan (NCP) product schedule, which lists chemical and biological products available for Federal On-Scene Coordinators (OSCs) to use in spill response and cleanup efforts. The decision to use dispersant during an oil spill incident follows a three step process:

- First, a dispersant must be listed on the NCP product schedule. Section 311(d)(2)(G) of the CWA requires that EPA prepare a schedule of dispersants, other chemicals, and other spill mitigating devices and substances, if any, that may be used in carrying out the NCP.
- The decision to use dispersants must be made in accordance with the appropriate Regional Response Team pre-approval guidelines and checklists.
- If the RRT representatives and the Department of Commerce and the Department of Interior natural resource trustees approve in advance the use of certain products under specified circumstances as described in the preauthorization plan, the OSC, in this case the United States Coast Guard (USCG), may authorize the use of the products without obtaining the specific concurrences.

Enclosed are responses to your specific questions. Please be assured that the Agency is committed to continuing to provide full support to the USCG and the Unified Command (UC), and will continue to take a proactive and robust role in monitoring, identifying, and responding to potential public health and environmental concerns. If you have further questions or if we can be of further assistance, please don't hesitate to contact me, or your staff may contact Arvin Ganesan at (202) 564-4741.

Sincerely,

A handwritten signature in black ink, appearing to read 'Lisa P. Jackson', with a stylized, flowing script.

Lisa P. Jackson

Enclosure

Enclosure

**1. It is my understanding that the main dispersants applied so far are from a product line called Corexit, some of which had their approval rescinded in Britain more than a decade ago, because laboratory tests found them harmful to sea life that inhabits rocky shores.**

- a. How did EPA ensure that this dispersant's toxicity to aquatic life was evaluated?**
- b. Was its toxicity to mollusks and other sea life that inhabit the Gulf of Mexico coast evaluated, and if so, what were the results? If not, why not?**
- c. If EPA relied on toxicity studies for coastal morphologies different from that of the Gulf Coast, what was done to evaluate the applicability of those studies for the use of the dispersants in the Gulf of Mexico environment?**
- d. Was the toxicity to other subsurface aquatic life evaluated? If so, please provide details, and if not, why not?**

**Answer:** It is our understanding that the criteria and testing of a dispersant to be listed on the UK product list are technically different than the criteria that are used in the United States. Dispersants must pass two tests in the UK to be approved:

- 1. A "sea test" which compares the relative impact of a water/dispersant/oil mix versus a sea water and oil mixture on brown shrimp. If the impact (morbidity, lack of movement, etc.) of the dispersant mixture appears to be worse than the seawater/oil mixture, the dispersant is not approved.
- 2. A "rocky shore test" looks at the impact on clams associated with direct spraying of dispersant onto the spilled oil or just the oil itself. If the dispersant causes "more harm" (which could be simply that the clam loses adhesion with the rock), then that dispersant is not approved for use.

The Corexit products (9500 and 9527) passed the sea test but did not pass the rocky shore test and therefore were not listed for use in the UK. However, the UK test does not determine whether the "inherent toxicity" is the reason for failing the test; rather, the test looks at the "relative harm" associated with the dispersant.

In the United States, we require a standard test of inherent toxicity (LC50 for 48 and 96 hours) which is used to compare various dispersant products relative to a standard #2 fuel oil. In addition, dispersants are not used on shorelines in the United States. They may be used only beyond 3 miles from shore and in water that is at least 10 meters deep.

EPA required toxicity tests to standard test species, including a sensitive species of Gulf of Mexico invertebrate (mysid shrimp) and fish (silverside) which are common species in Gulf of Mexico estuarine habitats. The invertebrate and fish species tested are considered to be representative of the sensitivity of many species in the Gulf of Mexico, based on years of toxicity testing with other substances. There are additional toxicity data for

other species available in the scientific literature. The toxicity of mollusks and other sea life were not evaluated as part of the EPA required tests.

**2. How is EPA tracking the volume of dispersants being used both in both surface and subsurface applications? How does EPA plan to determine whether their use causes harm to the aquatic ecosystem they come into contact with?**

**Answer:** The volume of dispersants being used by BP in both surface and subsurface applications is being reported to the Unified Command, which includes EPA, NOAA and the Coast Guard. These Agencies are providing oversight during the sampling and analysis process, as well as data interpretation. The sampling plan includes measures of dissolved oxygen and a biological assessment (e.g., Rototox toxicity test). Such tests can are a proxy to understand impacts to aquatic ecosystems. Additional water sampling and analysis plans for the surface monitoring are currently being finalized.

**3. Is EPA fully aware of all chemical constituents contained within the two formulations of Corexit dispersants currently being used? If so, please provide a list of each such constituent.**

**Answer:** EPA is aware of the chemical constituents contained within the two formulations of Corexit dispersants currently being used., NALCO has agreed to waive their CBI claim for a combined list of constituents for both COREXIT 9500 and 9527. The following list of chemicals has been developed for distribution by EPA.

| Item | CAS Registry Number | Chemical Name (TSCA Inventory)   |
|------|---------------------|--|
| 1    | 57-55-6             | 1,2-Propanediol  |
| 2    | 111-76-2            | Ethanol, 2-butoxy-   |
| 3    | 577-11-7            | Butanedioic acid, 2-sulfo-, 1,4-bis(2-ethylhexyl) ester, sodium salt (1:1) |
| 4    | 1338-43-8           | Sorbitan, mono-(9Z)-9-octadecenoate  |
| 5    | 9005-65-6           | Sorbitan, mono-(9Z)-9-octadecenoate, poly(oxy-1,2-ethanediyl) derivs.      |
| 6    | 9005-70-3           | Sorbitan, tri-(9Z)-9-octadecenoate, poly(oxy-1,2-ethanediyl) derivs        |
| 7    | 29911-28-2          | 2-Propanol, 1-(2-butoxy-1-methylethoxy)-                                   |
| 8    | 64742-47-8          | Distillates (petroleum), hydrotreated light                                |

**4. Did EPA ensure that tests were conducted to evaluate the efficacy and toxicity of the 18 dispersants it has approved for use? What were the results of the tests?**

**a. Did EPA rank the dispersants in terms of efficacy (in dispersing the sort of crude oil that is spewing into the Gulf of Mexico) and toxicity (to the sort of aquatic life contained in the Gulf of Mexico), as was asserted by the May 13 2010 article in Greenwire? If so, please provide this ranking. If not, why not?**

- b. Does EPA instruct entities who wish to use dispersants to use the most effective and least toxic dispersants in a particular operation? If so, then did EPA instruct BP to use Corexit? If not, does EPA lack the authority to prescribe the use of specific formulations?**
- c. Does EPA expect users of dispersants to themselves examine the safety and efficacy data that is applicable to the conditions of intended use and select the least toxic and most effective approved formulations?**
- d. Please provide copies of all documents, emails and other correspondence related to BP's use of dispersants in response to the Deepwater Horizon catastrophe.**

**Answer:** EPA evaluates dispersant according to the criteria listed under 40 CFR part 300.915 which includes measure of effectiveness and toxicity. EPA provides this information on our website, but we do not rank dispersants according to those measures. The required toxicity tests for placement on the NCP includes tests on a sensitive species of Gulf of Mexico invertebrate (mysid shrimp) and fish (silverside) which are common species in Gulf of Mexico estuarine habitats. The invertebrate and fish species tested are considered to be representative of the sensitivity of many species in the Gulf of Mexico, based on years of toxicity testing with other substances.

Under the National Contingency Plan, the Federal OSC, in this case the Coast Guard, has the discretion to choose a dispersant on the NCP Product Schedule. The OSC considers the efficacy of the dispersant, environmental impacts, and availability among other things, when making this decision. On May 20, 2010, the EPA and the Coast Guard issued a directive requiring BP to identify and use a less toxic dispersant, after EPA approval, from the NCP Product List.

Additionally, EPA is currently addressing your request for documents, emails and correspondence.

- 5. How do water temperature and pressure effect the degradation of dispersants?**
- a. Will the fact that the water temperature at the Deepwater Horizon leak is just above freezing affect the time it takes for the molecules to be degraded? If so, please elaborate.**
  - b. Have studies been performed to assess the efficacy or toxicity of the compounds at freezing temperatures? What are the results of these studies?**
  - c. How does the high pressure at the depth of the leaking wellhead affect where chemical dispersants and oil molecules spread in the water column? Does high pressure also affect the rate of degradation of oil and chemical molecules, and if so, how?**

**Answer:** The degradation of dispersants may be influenced by many factors including temperature and mixing efficiency. The test conditions under which dispersants are approved for listing on the NCP Product Schedule are listed under 40 CFR part 300.900 and appendix C to 40 CFR part 300. EPA recognizes that application of dispersants at the source of the oil discharge in deep water is a novel application of this technology.

Thus, as indicated above, EPA and our federal partners are monitoring the subsea application of dispersants.

**6. What information has EPA collected about the long-term effects of dispersants accumulating in sediment at the bottom of the ocean floor? Please provide these materials to me. If no such information has been collected, then why did EPA approve their use at the ocean floor? What effect could the accumulation of large volumes of dispersants on the ocean floor have on bottom-feeding organisms such as shrimp?**

**Answer:** The application of dispersants to the oil discharge at the depth of the Deepwater Horizon is a unique, novel and challenging situation. The OSC considers the efficacy of the dispersant, environmental impacts, and availability among other things, when making decisions about the use of dispersants. BP has utilized both surface and subsurface dispersants. Therefore, EPA and the Coast Guard are requiring BP to implement a robust sampling and monitoring plan. EPA is constantly reviewing data to determine if the subsurface application of dispersants is adversely impacting the environment more than the oil alone. Tests with mysid shrimp and silversides are considered to be representative of a broader range of species based on tests with many substances over the years.

**7. Has EPA determined whether chemical dispersants can accumulate in the tissue of fish and other aquatic life (including plants and un-hatched eggs) in the same or similar manner as other toxic materials such as mercury? If so, please provide documentation regarding what accumulations are likely, including materials regarding the implications for human health if the fish are consumed. If not, why not?**

**Answer:** EPA has not determined whether chemical dispersants can accumulate in the tissue of fish and other aquatic life similar to mercury or other toxic materials. Results of initial testing indicate that ingredients in COREXIT, the dispersant currently being used do not appear to have bioaccumulative properties. FDA will continue to monitor the use of dispersants and evaluate any impacts to seafood.

**8. Did EPA consider a variety of scenarios for the interaction of the dispersants with the oil plume when applied at the depth of the Deepwater Horizon leak? If not, why not? Did any scenarios considered include the formation of large underwater plumes at various depths, as appears to have occurred based on a preliminary scientific investigation as reported Sunday? If so, please provide all related documents. How does EPA plan on monitoring the long-term effect that these chemical dispersants have on aquatic life in the Gulf of Mexico?**

**Answer:** The application of dispersants to the oil discharge at the depth of the Deepwater Horizon is a unique and challenging situation. The OSC considers the efficacy of the dispersant, environmental impacts, and availability among other things, when making decisions about the use of dispersants.

Regarding recent media reports of underwater plumes, NOAA has stated that the research team has not reached any definitive conclusion about the composition of the undersea layers they discovered. Characterization of these layers will require analysis of samples and calibration of key instruments. The hypothesis that the layers consist of oil remains to be verified.

EPA plans to significantly increase our research on the potential human and environmental risks and impacts of the release of crude oil and the application of dispersants, surface washing agents, bio-remediation agents, and other mitigation measures. An additional funding request for this research was included in the Administration's recent legislative submission related to the BP oil spill.

**9. Is EPA aware of the ecological impacts of simultaneously using different formulations of dispersants during the mitigation efforts? Does the combination of chemicals change the toxicity or efficacy of the dispersant? If so, please provide documentation.**

**Answer:** EPA is not aware that different dispersants have not been used simultaneously in this response, although initially there was some overlap of the use of both of COREXIT 9500 and 9527.

**10. Given the start of the Atlantic hurricane season on June 1, did EPA consider the impact of the dispersants on marine life in a rapidly mixed water column should a hurricane develop in the Gulf of Mexico? If so, what did EPA determine? If not, why not?**

**Answer:** EPA is a part of the RRT and the NRT (National Response Team) which are comprised of various federal agencies with unique roles and responsibilities that contribute to decision-making for all response efforts. We are working together to evaluate the constantly changing conditions in the Gulf of Mexico, including impacts of hurricane season and the impact of dispersants on the aquatic environment.

**11. EPA has stated that although it has approved the use of chemical dispersants on surface and subsurface applications it "reserves the right to halt the use of chemical dispersants at any time if new data show more serious environmental harm is occurring." How is EPA monitoring environmental harm? What metrics or other problems does EPA consider to be cause for halting use of chemical dispersants?**

**Answer:** As part of the RRT, EPA is monitoring several factors at various depths including conductivity, temperature, and depth (CTD). The monitoring utilizes several techniques including:

- Fluorometer



- Laser In Situ Scattering and Transmissometry (LISST) Particle Analysis
- Dissolved Oxygen
- Water sampling from surface to 550 meters for PAH analysis
- Aerial Visual Observation
- Rototox toxicity testing (subsurface only)
- UV-Fluorescence testing

On a daily basis, EPA is evaluating all the data generated by the tests above and makes a daily decision on whether to proceed with subsurface application.

**Congress of the United States**  
**Washington, DC 20515**

May 19, 2010

President Barack Obama  
The White House  
Washington, DC 20500

Mr. President:

We write to commend your administration's ongoing efforts to respond to the British Petroleum (BP) oil spill. From day one, you mobilized the government's resources to minimize the harm to the health, economy, and environment of the Gulf Coast. Last week, you sent to Congress legislation that would provide additional resources to mitigate the damage caused by this spill, provide assistance to the people and businesses most affected by the crisis, and ensure that companies like BP that are responsible for oil spills are the ones that pay for the harm caused by them – not the taxpayers. We look forward to working with you to enact these measures.

Additionally, we support your efforts to conduct a "top-to-bottom" reform of the Minerals Management Service (MMS). Secretary Salazar's proposal to split the MMS into three distinct agencies – one responsible for leasing, one for collecting royalties, and one responsible for inspections and safety – is long overdue. The Secretary has also ordered immediate inspections of all deepwater operations in the Gulf and has announced that no permits for drilling new wells will go forward until the 30-day safety and environmental review that you requested is completed. Finally, your administration is closing loopholes that allowed some oil companies to bypass critical environmental reviews and it is examining all of the environmental procedures for oil and gas activities.

While these are important and necessary steps, we believe more must be done. We were pleased to learn that you will be establishing, through Executive Order, an independent commission to investigate the causes, response and impacts of the BP oil spill. This commission will be critical in providing a thorough and unbiased assessment of what happened and how such disasters can be averted in the future.

As you know, we have introduced legislation – the BP Deepwater Horizon Inquiry Commission Act of 2010 (H.R. 5241/S. 3344) – to establish such a panel. Our legislation may be useful to you as you craft the exact responsibilities and membership of the commission.

We believe the commission should have three primary charges. First, it should investigate and examine the causes of the current spill and the adequacy of oil spill containment and clean-up measures, including recommendations on how to strengthen applicable laws and regulations and to reform agency oversight to keep this from happening again. Second, it should assess the consequences of the spill to sensitive and ecologically important areas, as well as the economic impacts to coastal communities. Finally, it should determine whether and how such spills can be

avoided in the future. We believe it is also very important the commission not only investigate BP and other private companies involved with the spill, but evaluate the performance of federal and state agencies responsible for oversight of offshore drilling.

An independent commission will serve as an important long-term addition to your immediate efforts to investigate and respond to the oil spill. Similar commissions have been convened in the past to investigate disasters, including the nuclear meltdown at Three Mile Island and the Challenger Space Shuttle explosion. Those panels provided valuable insight and important recommendations regarding nuclear issues and space policy. The same result should be expected from a commission to investigate the BP oil spill.

As you know, this horrific tragedy has claimed 11 lives and contaminated Gulf waters with millions of gallons of oil. It is still spilling thousands of barrels of oil into the water every day, and attempts to completely stop the leaks thus far have been unsuccessful. The oil has now reached the shores of Louisiana. It's affecting the livelihoods of millions in the Gulf Coast states and threatens more.

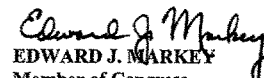
We thank you for taking the critically important step of establishing an independent commission to investigate the BP oil spill. It further exemplifies your commitment to complete transparency and accountability, and it will compliment the efforts already underway. To ensure that our scrutiny matches the depth and breadth of this human, economic, and environmental disaster an independent commission is necessary to provide a roadmap for future actions in our offshore areas to avoid a repeat of this tragedy.

We look forward to continuing to work with you on this very important issue.

Sincerely,

  
LOIS CAPPS  
Member of Congress

  
SHELDON WHITEHOUSE  
U.S. Senator

  
EDWARD J. MARKEY  
Member of Congress

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ONE HUNDRED ELEVENTH CONGRESS

## Congress of the United States

### House of Representatives

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WASHINGTON, DC 20515-6115

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May 19, 2010

Admiral Thad W. Allen  
 Commandant  
 United States Coast Guard  
 2100 Second Street, SW Stop 7101  
 Washington, DC 20593-7101

Dear Admiral Allen:

Recent news reports and congressional testimony indicate that efforts to stop the BP oil spill, which is occurring 5,000 feet beneath the ocean surface, are being monitored in real time by ongoing video feeds from the numerous robots and other submarine vessels that are being deployed around the area of the blowout preventer and the broken riser pipe. Although the accident occurred nearly a month ago, and remotely operated vehicles arrived soon thereafter, BP did not release any video until 23 days after the accident. To date only a small fraction of the video has been released to the public, primarily in response to requests from Congress.

I am writing to ask that you make these ongoing live feeds publicly available. Although BP argues that these video feeds belong to BP, the American public has a right to the information that they contain and to be able to see for themselves BP's progress in containing this ongoing environmental disaster. I understand you have access to this feed. Allowing the public to view this video could provide our best scientists and engineers with information that could be helpful in developing much needed solutions to the ongoing oil spill, both in terms of subsea operations and surface spill response.

For instance, Dr. Steve Wereley of Purdue University has used a video-based method for calculating the rate of flow from the broken riser pipe and additional video would assist him in developing a more precise estimate of the rate of oil flowing from that pipe. Dr. Wereley estimates that approximately 70,000 barrels of oil a day are flowing out of the pipe, however his estimate is based on only a very short video sample. Other scientists have conducted similar video-based efforts. An ongoing live feed would provide him

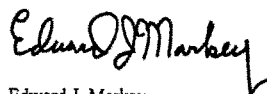
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with ample opportunity to obtain representative video samples and to then provide an updated estimate.

There are many other first class scientists and engineers who could apply their talent and expertise toward solving this disaster if they were able to view the ongoing efforts in real time and/or review and analyze large segments of the video as it is collected.

Congress and the American public has a right to know what is happening in real time, so that they can understand and react to the situation as it develops. Accordingly, I am asking that you allow relevant Congressional Committees to link to the live video feeds coming from the ocean floor. We will be happy to host such live feeds on our websites, and stream it free of charge to the world. I believe it is in all our interests, including BP's, for there to be transparency in all aspects of the response to this unfolding catastrophe. That way, we will see BP's spill response efforts and activities as they actually happen, and we will be able to judge for ourselves their efficacy, wisdom and ultimate environmental impact.

Sincerely,



Edward J. Markey  
Chairman

Subcommittee on Energy and  
Environment  
Committee on Energy and  
Commerce

Cc: Honorable Henry Waxman, Chairman,  
Committee on Energy and Commerce

Honorable Joe Barton, Ranking Member  
Committee on Energy and Commerce

Honorable Fred Upton, Ranking Member, Subcommittee on Energy and  
Environment

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 STEVE SCALISE, LOUISIANA

May 19, 2010

Mr. Lamar McKay  
 President and CEO  
 BP America, Inc.,  
 501 Westlake Park Boulevard  
 Houston, Texas, 77079

Dear Mr. McKay:

Recent news reports and congressional testimony indicate that BP's efforts to stop the flow of oil 5,000 feet beneath the ocean surface are being monitored in real time by ongoing video feeds from the numerous robots and other submarine vessels that are being deployed around the area of the blowout preventer and the broken riser pipe. Although the accident occurred nearly a month ago, and remotely operated vehicles arrived soon thereafter, BP did not release any video until 23 days after the accident. To date only a small fraction of the video has been released to the public, primarily in response to requests from Congress.

I am writing to ask that you make these ongoing live feeds publicly available. Although BP argues that these video feeds belong to BP, the American public has a right to the information that they contain and to be able to see for themselves BP's progress in containing this ongoing environmental disaster. Allowing the public to view this video could provide our best scientists and engineers with information that could be helpful in developing much needed solutions to the ongoing oil spill, both in terms of subsea operations and surface spill response.

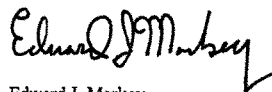
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pipe, however his estimate is based on only a very short video sample. Other scientists have conducted similar video-based efforts. An ongoing live feed would provide him with ample opportunity to obtain representative video samples and to then provide an updated estimate.

There are many other first class scientists and engineers who could apply their talent and expertise toward solving this disaster if they were able to view the ongoing efforts in real time and/or review and analyze large segments of the video as it is collected.

Congress and the American public has a right to know what is happening in real time, so that they can understand and react to the situation as it develops. Accordingly, I am asking that you allow relevant Congressional Committees to link to the live video feeds coming from the ocean floor. We will be happy to host such live feeds on our websites, and stream it free of charge to the world. I believe it is in all our interests, including BP's, for there to be transparency in all aspects of the response to this unfolding catastrophe. That way, we will see BP's spill response efforts and activities as they actually happen, and we will be able to judge for ourselves their efficacy, wisdom and ultimate environmental impact.

Sincerely,



Edward J. Markey  
Chairman

Subcommittee on Energy and  
Environment  
Committee on Energy and  
Commerce

Cc: Honorable Henry Waxman, Chairman,  
Committee on Energy and Commerce

Honorable Joe Barton, Ranking Member  
Committee on Energy and Commerce

Honorable Fred Upton, Ranking Member, Subcommittee on Energy and  
Environment

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Mr. Lamar McKay  
President and CEO  
BP America, Inc.  
501 WestLake Park Boulevard  
Houston, Texas 77079

Mr. Steve Newman  
President and CEO  
Transocean Ltd.  
P.O. Box 2765  
Houston, TX 77252

Mr. David J. Lesar  
Halliburton Co.  
U.S. Corporate Headquarters  
3000 North Sam Houston Parkway East  
Houston, Texas 77032

Dear Mr. McKay, Mr. Newman and Mr. Lesar:

Over the past month, BP has maintained that only 5,000 barrels a day of oil are flowing from the Deepwater Horizon well into the Gulf of Mexico. It is now clear that this estimate is highly inaccurate. At a minimum, tens of thousands of barrels a day are escaping from the well, with some estimates ranging above 70,000 barrels a day. This amount of oil flowing directly and continuously into the ocean is unprecedented. The Gulf region is now experiencing an environmental catastrophe of unknown proportions – not only in the volume of the oil spilled, but also in the use of dispersants, in the virtually unknown behavior of oil expelled at low temperatures and high pressures on the deep sea floor, and in the movement of oil plumes at various depths along different currents. Your companies bear complete responsibility for this disaster and have a duty to assist with the investigation of the causes of the spill, to implement solutions that halt the flow of oil, to

ONE HUNDRED ELEVENTH CONGRESS

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**House of Representatives**

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May 21, 2010

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PARKER GRIFITH, ALABAMA  
ROBERT L. LATTI, OHIO



monitor the spill's location and trajectory, and to assess ecological impacts on the human, marine and coastal populations of the oil and the oil/dispersant mixes being released.

To that end, I ask that you establish a fund, managed by an independent entity, to make funding available to researchers in academia and other independent institutions that might assist with these efforts. We need to have all of our best minds on board and all hands on deck to confront this ongoing environmental catastrophe. In your efforts to "do whatever it takes" to resolve the crisis, it would be short-sighted to ignore the hundreds of scientists in the region that are ready, able and willing to lend a hand, if only they had the funds for sample collection, travel, supplies and analyses.

Making grants available to independent researchers and laboratories would also remove the pall of conflicting interests that hangs over the current *modus operandi* – such as the use of the TDI-Brooks International laboratory in College Station, TX, which was reported in today's New York *Times*. According to the Times article, since this lab counts BP among its biggest clients, concerns have been raised about a potential appearance of partiality. The public is going to be mistrustful of the results, and BP is under suspicion regardless of the accuracy of the data. Therefore allowing independent scientists to sample our oceans and provide their own independent tests-- using their own laboratories-- will be critical in generating reliable and unbiased information.

Given the tens of millions of dollars already provided by BP to the Gulf States for promoting tourism – worthwhile but hardly expected to address the issues of the spill itself – it would be only reasonable to provide a similar amount to those scientists and researchers that could actually assist in the monitoring and mitigation of the spill and its effects.

If you have any questions or concerns, please have your staff contact Michal Freedhoff of my staff (202-225-2836). We look forward to your response.

Sincerely,



Edward J. Markey  
Chairman, Subcommittee on Energy and  
Environment  
Energy and Commerce Committee

Cc: Honorable Henry Waxman, Chairman,  
Honorable Joe Barton, Ranking Member  
Honorable Fred Upton, Ranking Member

## **HALLIBURTON**

---

Tim Probert  
President, Global Business Lines & Corporate Development

June 1, 2010

The Honorable Edward J. Markey  
Chairman  
Subcommittee on Energy and the Environment  
Energy and Commerce Committee  
2125 Rayburn House Office Building  
Washington, DC 20515

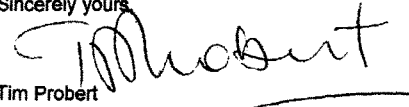
Dear Mr. Chairman:

Thank you for your letter of May 21 in which you asked Halliburton, BP, and Transocean to establish a fund that would be managed by an independent entity to make funding available to researchers in academia and other independent institutions to monitor and mitigate the potential environmental effects of the Deepwater Horizon spill.

We at Halliburton share your concern about the environmental impacts of the disaster, but we do not share your assessment that Halliburton is among the companies that "bear[s] complete responsibility" for it. Halliburton is confident that the cementing work on the Mississippi Canyon 252 well was completed in accordance with the requirements of the well owner's well construction plan.

Much work lies ahead to assess what led to the catastrophe and the resulting environmental effects caused by the blowout. We are committed to doing our part to find answers. As I testified before the Subcommittee on Oversight and Investigations on May 12, "Halliburton looks forward to working with you, your colleagues, and your staff to understand what happened and what we collectively can do in the future to ensure that oil and gas production in the United States is undertaken in the safest, most environmentally responsible manner possible." Since then, the President has announced formation of the National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling. We look forward to working with its leadership to help ascertain what went wrong and what we collectively should do as an industry to enhance safety and protection of the environment going forward.

Sincerely yours,

  
Tim Probert

cc: Honorable Henry A. Waxman, Chairman  
Joe Barton, Ranking Member  
Fred Upton, Ranking Member



**David C. Nagel**

Executive Vice President  
BP America Inc.



BP America Inc.  
1101 New York Avenue, NW  
Suite 700  
Washington, DC 20005

Direct (202) 457-8581  
Main (202) 785-4888  
Fax (202) 457-8597

July 14, 2010

The Honorable Edward J. Markey  
Chairman, Subcommittee on Energy and Environment  
Energy and Commerce Committee  
United States House of Representatives  
2125 Rayburn House Office Building  
Washington, D.C. 20515

Dear Chairman Markey:

I am writing on behalf of BP America Inc. in response to your letter of May 21, 2010 to Mr. Lamar McKay asking that BP facilitate research regarding the potential environmental effects of the Deepwater Horizon incident.

We deeply regret the impact the spill has had on the environment, the wildlife, and the ecosystem of the Gulf. We want to assure you that BP is committed to doing everything it can to contain the flow of oil and secure the leaking well and to meeting its obligations arising from the spill as a responsible party along with Transocean Ltd., Anadarko Petroleum Corp., and MOEX Offshore 2007 LLC. We refer you to the other parties for explanation of their commitments as responsible parties.

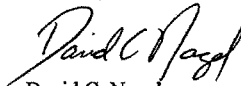
BP has announced a \$500 million commitment over a 10-year period to create a broad independent research program named the Gulf of Mexico Research Initiative (GRI). The GRI will investigate the effects of oil, dispersed oil, and dispersant on the ecosystems of the Gulf of Mexico and affected coastal States in the context of improving fundamental understanding of environmental stresses. The Initiative will also seek to develop improved spill mitigation and oil detection, characterization and remediation technologies. The ultimate goal of the research efforts will be to improve society's ability to mitigate the impacts of hydrocarbon pollution and other stressors on the marine environment, with an emphasis on conditions found in the Gulf of Mexico.

The bulk of GRI activity will be funded through a Request for Proposals process coordinated by an Advisory Council of independent scientific experts with deep understanding of the technical content and research management issues of a program of this magnitude. However, in recognition of the fact that the process for awarding funding will take some months to complete, BP has decided to make a portion of the \$500 million total available through fast-track grants to research institutions or consortia of research institutions in Gulf Coast states. BP announced on June 15 that several research institutions in the Gulf region will receive a total of \$25 million in fast-track funding: \$10 million to the Florida Institute of Oceanography; \$5 million to Louisiana State University as part of GRI's grant of \$10 million over 10 years to the

university; and \$10 million to the Northern Gulf Institute. On July 8, BP committed an additional \$5 million in fast-track funding to the Alabama Marine Environmental Sciences Consortium. These grants are intended to support immediate needs of Gulf-based researchers and their collaborators with research aims that are consistent with the overall objectives of the GRI, as well as to ensure that baseline sampling can take place as soon as possible. BP is presently consulting with governors and state and local environmental and health authorities to design the Initiative to take into consideration the environmental and public health of the Gulf Region. We are committed to seeing that the highest professional standards are used in determining which institutions should receive GRI funding.

Thank you for the opportunity to respond to your letter. If you have any questions please feel free to contact me or to have your staff contact Liz Reicherts at (202) 457-6585.

Sincerely,



David C. Nagel

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 PARKER GRIFITH, ALABAMA  
 ROBERT E. LATTI, OHIO

May 24, 2010

Mr. Lamar McKay  
 President and CEO,  
 BP America, Inc.  
 501 Westlake Park Boulevard  
 Houston, Texas, 70779

Dear Mr. McKay:

As the oil spill in the Gulf of Mexico continues into its second month, all eyes are on the broken and gushing riser pipe 5000 feet below the ocean floor. Just last week, in response to my request, you agreed to grant the public access to the live video feed from the accident site. The entire world is now able to see for itself a limited view of the oil flowing into the ocean waters, as well as efforts by BP to contain the spill. That is a critical step forward in providing the transparency necessary for the public and for outside experts to be able to judge the size and extent of the spill, and to consider and evaluate options for halting the flow of toxic oil and oil dispersant mixes into the environment. It will also be important to subsequent efforts to assess the full extent of natural resource damages resulting from the BP spill.

I appreciate your decision to allow the public to view this feed, and as you know, there has been an overwhelming response to the availability of this information. The websites for the Select Committee on Energy Independence and Global Warming and the Energy and Commerce Committee have received hundreds of thousands of visitors seeking to watch this feed. Due to the incredible response, BP decided put the live feed on its own website and provided access to news organizations. I commend your efforts to provide this information to the public.

However, I have received thousands of comments from citizens across the nation regarding this footage, and feel it is important to make you aware of those comments, including:

**Multiple Screens:** BP currently has the ability to view several video images from the ocean floor at one time, using as many as 12 cameras at one time. While BP has made these images available to members of Congress, there is still only one video feed available to the public and news media.

**Date and Time Information** Previous footage included date and time stamp information. The current live feed does not contain such information.

**Archiving of Footage:** Several scientists and students from Universities have informed the Select Committee that archiving the video could help others devise better response efforts and develop new engineering technology to be used on the ocean floor in the future.

I would like to ask that you make immediately available, in real time, feed from all of the cameras that are currently operating at the accident site, and that you retain all available footage. BP has the capacity to provide live streams from several different camera sites operating underwater at the accident site. Although not all such cameras are operating simultaneously, BP can stream live feed from all video sites that are in operation at any given time.

As an example of the importance of this information, our initial view of the live feed from all cameras revealed at least two cameras showing 2 leaks at different points of the riser pipe. Although much of the live feed has shown the oil flowing from what appears to be the larger of the two leaks, to our knowledge the live feed has not allowed the public to view the smaller of the two leaks. In addition, BP now appears to be showing on live feed some critical rover activities, which are presumably being conducted in preparation for the upcoming "top kill" effort. If all cameras were streaming live feed, we would be able to obtain a more complete picture of the situation. If there is footage being shot from any camera, we would ask that you make it available to news media and the public.

I want to emphasize that I do not want to affect operations of the spill response team in any way by seeking this information for the public. It is of supreme importance that BP immediately take whatever actions are necessary to stop the flow of oil and kill the well. I would not want BP to redirect cameras or to affect in any way the quality or integrity of the live video feed to operators or others within the response team.

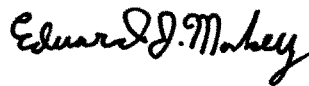
I do, however, ask that you make available all live video feed from all cameras that are operational at any given time and see no reason why, at this point in the 21<sup>st</sup> century, that such information cannot be made available without any impact on operations. This information will be helpful to the public and to outside experts attempting to assess the situation and to devise solutions to the problem. In particular, this information will be necessary for purposes of transparency, as BP conducts its "top kill" operation and other operations designed to stop the flow of oil.

Although the spill is BP's, the ocean into which it is flowing, and the coastlines and subsea environments that it is destroying belong to the American people. It is incumbent upon BP to at least provide the American public with a complete and accurate picture of the situation as it unfolds.

Because of the overwhelming interest in viewing this information, especially as BP heads into this week's "Top Kill" activity, I strongly suggest that you make the video feeds available in easy to access, multiple formats that will make it easier for the public to access, share and comment on.

Finally, I want to request that you archive and not destroy all available video footage shot since the time of the accident. This footage will be a critical record of the event and will be useful to the Independent Blue Ribbon Commission created by President Obama. I would request that you make such footage publicly available as soon as possible.

Sincerely,

A handwritten signature in black ink, reading "Edward J. Markey". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

Edward J. Markey  
Chairman, Subcommittee on Energy and  
Environment  
Committee on Energy and Commerce  
Committee

CC: Honorable Henry Waxman, Chairman  
Honorable Joe Barton, Ranking Member  
Honorable Fred Upton, Ranking Member

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CHAIRMAN  
NATURAL RESOURCES

EDWARD J. MARKEY  
7TH DISTRICT, MASSACHUSETTS

**Congress of the United States**  
**House of Representatives**  
Washington, DC 20515-2107

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(508) 875-2900

<http://markey.house.gov>

May 25, 2010

The Honorable Margaret Hamburg, M.D.  
Commissioner  
U.S. Food and Drug Administration  
10903 New Hampshire Ave.  
Silver Spring, MD 20993

Dear Dr. Hamburg:

I write to request information relating to the potential impacts on seafood from the use of chemical dispersants following the explosion aboard the Deepwater Horizon drilling rig. The spill has significantly impacted the fishing industry in the Gulf of Mexico and its recovery will be dependent on public confidence in food safety. The current closures of fisheries in the Gulf ensure the safety of seafood in the near term, but there are questions that need to be addressed in order to re-open the fisheries quickly and safely. It is vital that FDA be involved in the monitoring of the impacts of dispersants on aquatic life.

As a measure to mitigate the impact of the oil spill, BP has used chemical dispersants, which break down oil into tiny particles that scatter and sink into the sea or are consumed by microbes. These chemicals are being sprayed onto the surface of the ocean, and are also being applied at the source of the leak, almost one mile below sea level, which has never been done before. The U.S. Environmental Protection Agency just yesterday ordered that their use be reduced because questions remain about their safety.

To date, BP has used approximately 705,000 gallons of a trademarked dispersant called Corexit on the ocean surface and approximately 115,000 gallons of the dispersant subsurface, at the source of the spill. According to EPA<sup>1</sup>, the Corexit products selected are among the most toxic and least effective dispersants approved for use. Some Corexit formulations were banned in the United Kingdom more than a decade ago because of their toxicity to some aquatic life.

I am concerned that because these toxic chemicals were not intended to be used for such long durations, and were not intended to be used at such depths, there could be serious and unknown long-term consequences for the marine ecosystem, the food chain and human health.

<sup>1</sup> [http://www.epa.gov/emergencies/content/ncp/tox\\_tables.htm](http://www.epa.gov/emergencies/content/ncp/tox_tables.htm)



Dr. Hamburg  
Page 2 of 3

It is my understanding that when evaluating the toxicity of dispersants to determine whether they should be placed on the National Contingency Plan (NCP) Product Schedule of approved dispersants, EPA requires two species to be exposed to a mixture of the dispersant and oil for 48 hours (for mysidopsis, a species of shrimp) and 96 hours (for menidia, a species of fish) to determine how many of the test sample die upon exposure. The selected time-frames could be viewed as a relevant measurement of the toxicity of a dispersant intended to be used to mitigate a discrete oil spill, but it is unclear how these measurements could be used to assess the toxicity associated with the prolonged use of dispersants that has already been conducted during this incident. The standard tests on these dispersants do not appear to be designed to measure the effects associated with chronic, sustained exposure to these chemicals.

As part of the monitoring of the subsea application of dispersants, EPA is also measuring toxicity using a standard test on rotifers, a type of plankton important to the Gulf of Mexico aquatic food chain. It is unclear how results of the rotifer and NCP list tests can be used to predict the long-term impact of the dispersants on other aquatic animal species, coral and aquatic plants, particularly given the tendency for these chemicals to accumulate in sediment at the ocean's floor. In fact, just last week Dr. Sylvia Earle, former Chief Scientist of National Oceanic and Atmospheric Administration (NOAA), called on BP to halt the use of dispersants subsea, stating that multiple species of aquatic animals are "awash in a lethal brew" of oil and dispersant chemicals.

EPA recognizes the environmental tradeoffs that results from the use of these chemicals, which is why they have directed BP to identify and utilize a less toxic and more effective product and dedicated its own scientists to assist in these efforts.

Despite this directive, BP continues to insist on the use of its choice Corexit dispersant.<sup>2</sup> The truth is we know little about the long-term ecological effects of the use of any dispersants, and how these dispersants may, as result of contaminating the aquatic food chain, also impact human health. While it is understandable that other mitigating options must be explored in order to keep as much oil as possible from reaching land, the inability of BP to quickly stop the flow of oil and BP's choice to continue to use one of the most toxic and least effective of all approved dispersants, underscores the necessity to vigilantly monitor the impacts these choices may have human health. Consequently, I ask that you respond to the following questions:

1. FDA's webpage<sup>3</sup> states that "available information indicates that dispersants being used to combat the oil spill do not accumulate in seafood." On what basis was this statement made? Please provide all documentation that demonstrates that the sustained long-term use of high volumes of dispersants both on the surface and on the ocean floor does not accumulate in seafood. Does this available information also include evidence that the dispersants being used do not accumulate in plants or un-hatched eggs?

<sup>2</sup> <http://www.epa.gov/bpspill/dispersants/5-21bp-response.pdf>

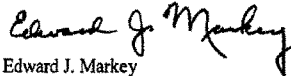
<sup>3</sup> <http://www.fda.gov/Food/ucm210970.htm>

Dr. Hamburg  
Page 3 of 3

2. How does the FDA monitor whether dispersant chemicals are present in the tissue of fish that are sold for consumption?
3. What federal standards are in place for how much dispersant (or its constituent chemicals) can be present in seafood consumed by humans?
4. Would it be necessary for the FDA to be aware of the full chemical composition of the dispersants being used in order to accurately monitor and regulate them? If so, does FDA have this information?
5. How does FDA plan on monitoring the long-term effect that these chemical dispersants have on aquatic life in the Gulf of Mexico and the consequent effect that consumption of seafood from the Gulf has on human health? Will FDA continue to conduct such monitoring to ensure that as these chemicals move up the food chain from plants to fish intended for human consumption, that they don't appear weeks, months or years after the use of dispersants is halted?
6. What actions will FDA be required to take if it is determined that consumption of contaminated seafood is a human health concern?

Thank you for your assistance and cooperation in responding to this request. Should you have any questions, please have your staff contact Dr. Michal Freedhoff or Dr. Avenel Joseph of my staff at 202-225-2836.

Sincerely,



Edward J. Markey

Member of Congress



DEPARTMENT OF HEALTH AND HUMAN SERVICES

Food and Drug Administration  
Silver Spring, MD 20993**JUL 28 2010**

The Honorable Edward J. Markey  
House of Representatives  
Washington, D.C. 20515-2107

Dear Mr. Markey:

Thank you for your letter of May 25, 2010, in which you expressed concern about the use of chemical dispersants for crude oil following the explosion and subsequent oil spill involving the Deepwater Horizon drilling rig. Specifically, you expressed concern that because these chemicals were not intended to be used for long durations, and were not intended to be used at such depths, there could be serious and unknown long-term consequences for the marine ecosystem, the food chain, and human health.

The Food and Drug Administration (FDA or the Agency) shares your concern about ensuring the safety of seafood coming from the Gulf of Mexico. We recognize that the spill has significantly impacted the fishing industry in the Gulf, and its recovery will be dependent upon public confidence in the safety of seafood from that region. As you are aware, state and federal authorities have closed waters to fish and fishery product harvesting to prevent the sale and potential consumption of contaminated seafood. Furthermore, FDA, the Environmental Protection Agency (EPA), and the National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service, working collaboratively with the Gulf Coast states, have agreed on a protocol to determine when closed federal and state harvest waters can be re-opened. FDA is confident that when followed, this protocol will ensure that seafood harvested from the re-opened areas will be fit for consumption. Under the current protocol, harvest waters should not re-open until it is determined that there is no active oil contamination in the area, it is not likely to become oiled in the near future, and the seafood samples from the area successfully pass both sensory analysis by trained experts and subsequent chemical analysis to ensure that they contain no harmful oil residues.

With regard to your specific questions concerning the chemical dispersants, we have restated each question, followed by FDA's response.

1. FDA's webpage states that "available information indicates that dispersants being used to combat the oil spill do not accumulate in seafood." On what basis was this statement made? Please provide all documentation that demonstrates that the sustained long-term use of high volumes of dispersants both on the surface and on the ocean floor does not accumulate in seafood. Does this available information also include evidence that the dispersants being used do not accumulate in plants or un-hatched eggs?

Response: FDA has determined that the chemical dispersants currently used to combat the Deepwater Horizon oil spill, COREXIT® EC9527A and COREXIT® 9500, have a low potential for bioconcentration in seafood species. Our assessment included a review of current scientific literature and the COREXIT® Material Safety Data Sheets (MSDSs), which are required by the Occupational Safety and Health Administration to identify and describe the physical and biological properties of constituents of the finished products. The constituents were reviewed by FDA toxicologists and chemists for potential toxicity, and the ability to bioconcentrate in seafood species. NOAA is conducting further studies on exposure of seafood to dispersants, and if the results indicate a potential for bioconcentration of the dispersants or their constituents, FDA and NOAA have the ability to test for these compounds.

The potential for a chemical to become concentrated in aquatic organisms is described by the bioconcentration factor (BCF). According to EPA guidelines, "the BCF is defined as the ratio of chemical concentration in the organism to that in surrounding water." Bioconcentration occurs through uptake and retention of a substance from water, through gill membranes or other external body surfaces.<sup>1</sup> The scientific community generally accepts the following scale for measuring BCF: a BCF greater than 1000 indicates a high potential for bioconcentration, a BCF between 250 and 1000 indicates a moderate potential, and a BCF below 250 indicates a low potential. For food safety purposes, it is generally accepted that any chemical with a BCF of less than 100 does not pose a public health concern.

The constituents and characteristics of COREXIT® EC9527A and COREXIT® 9500 dispersants are as follows:

- Propylene glycol, a constituent of both COREXIT® EC9527A and COREXIT® 9500, is generally recognized as safe (GRAS) by FDA in 21 *Code of Federal Regulations* (CFR) 184.1666, for use as a direct food additive under the conditions prescribed. Among other uses, it is a moisturizer in medicines, cosmetics and toothpaste. Propylene glycol has a BCF of 3, which is a low order of bioconcentration.
- 2-butoxyethanol, a constituent of COREXIT® EC9527A, is also a primary ingredient of various cleaners, liquid soaps and cosmetics. 2-butoxyethanol has a BCF of 3, which, again, is a low order of bioconcentration. The half-life for 2-butoxyethanol in water is approximately 1-4 weeks, indicating that it is readily biodegradable.
- Proprietary organic sulfonic acid salt, a constituent of both COREXIT® EC9527A and COREXIT® 9500, is reported by the manufacturer to be readily biodegradable, non-bioaccumulative, and moderately toxic to fresh water fish and invertebrates. It has a BCF of 10, which is also a low order of bioconcentration.
- Petroleum distillates, constituents of COREXIT® 9500, are volatile organic solvents produced from crude oil (e.g. mineral spirits, kerosene, white spirits, and naphtha). They are

<sup>1</sup> In the context of setting exposure criteria, it is generally understood that the terms "BCF" and "steady-state BCF" are synonymous. A steady-state condition occurs when the organism is exposed for a sufficient length of time and the ratio does not change substantially.

Page 3 – The Honorable Edward J. Markey

common in hundreds of consumer products, including lip-gloss and deodorants. Petroleum distillates have BCFs ranging from 60 to 80, indicative of a low potential for bioconcentration.

The low BCFs are due to the fact that the constituent compounds present in the dispersants are of a type which does not penetrate the lipid barrier of the intestinal tract in finfish or shellfish, and thus there is no uptake into the body of the seafood organism.

With respect to the potential for accumulation of dispersants in aquatic plants and eggs, FDA defers to EPA on these issues, as they do not fall directly within FDA's regulatory jurisdiction for the safety of food for human consumption.

In summary, although seafood is exposed to the dispersants, the inherent properties of the dispersants minimize the possibility of their being present in food. Based on current scientific literature and our assessment, the potential for bioconcentration of the constituents in the COREXIT® dispersants in aquatic organisms is low, and thus there is no information at this time to indicate that they pose a public health threat from exposure through the consumption of seafood.

2. How does the FDA monitor whether dispersant chemicals are present in the tissue of fish that are sold for consumption?

Response: Other than the sensory analysis for oil and dispersants conducted pursuant to the FDA-NOAA Gulf Fisheries Reopening Protocol, FDA does not presently monitor for dispersant chemicals in the tissue of seafood because of the dispersants' low bioconcentration potential. This decision is based on our assessment described in the answer to Question 1. However, and as noted in the previous response, NOAA is conducting further studies on seafood exposure to dispersants and if the results show the potential for bioconcentration, NOAA and FDA have the ability to test for COREXIT® dispersant constituents. We have addressed the possibility for such analyses in the NOAA-FDA Gulf Fisheries Reopening Protocol developed in response to the oil spill, and FDA's electronic sensing analyzers have been calibrated for both crude oil and dispersants.

3. What federal standards are in place for how much dispersant (or its constituent chemicals) can be present in seafood consumed by humans?

Response: Bioconcentration of COREXIT® dispersant chemicals in seafood intended for human consumption has not been demonstrated to occur. Therefore, federal standards for the dispersant chemicals in seafood have not been proposed.

4. Would it be necessary for the FDA to be aware of the full chemical composition of the dispersants being used in order to accurately monitor and regulate them? If so, does FDA have this information?

Response: It is necessary for FDA to be fully informed of the complete composition of dispersants in order to scientifically assess their significance to seafood safety as well as to

monitor and regulate them in the event a hazard was identified. FDA is aware of the chemical identities of constituents comprising COREXIT® EC9527A and COREXIT® 9500.

5. How does FDA plan on monitoring the long-term effect that these chemical dispersants have on aquatic life in the Gulf of Mexico and the consequent effect that consumption of seafood from the Gulf has on human health? Will FDA continue to conduct such monitoring to ensure that as these chemicals move up the food chain from plants to fish intended for human consumption, that they don't appear weeks, months, and years after the use of dispersants is halted?

Response: The 2005 National Research Council (NRC) report "Oil Spill Dispersants: Efficacy and Effects," which was reviewed in our assessment, concluded that the potential acute lethal toxicity of chemically dispersed oil is primarily associated with the dispersed oil and dissolved oil constituents following dispersion and not with the current generation of dispersants themselves. FDA does not presently monitor for COREXIT® dispersant chemicals in the tissue of seafood because of their low bioconcentration potential, and the Agency does not have plans for long-term studies of COREXIT® dispersant constituents in seafood. This position is based upon our assessments as described in the answer to Question 1.

FDA is responsible for the human health implications of commercial seafood consumption and will continue to work with our federal, state, and academic partners to identify and characterize contaminants in seafood intended for human consumption. Other federal agencies, including NOAA and EPA, focus more directly on water quality, including impacts to aquatic life from chemical discharges.

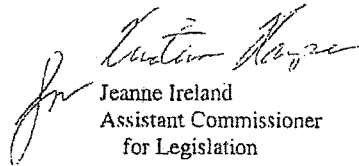
6. What actions will FDA be required to take if it is determined that consumption of contaminated seafood is a human health concern?

Response: FDA is working with NOAA and the states to prevent the consumption of contaminated seafood through a series of risk-management approaches. This includes the closure of waters to fish and shellfish harvesting, the elaboration and implementation of a strict protocol to determine when closed harvest waters can safely be re-opened, ongoing surveillance sampling and testing of fish and fishery products for contaminants of concern, and stepped-up enforcement of FDA's existing Hazard Analysis and Critical Control Point (HACCP) regulations, which require that seafood processors identify and address reasonably-expected hazards to the safety of their products. An example of such a hazard would be an assurance that processors not accept seafood from areas that are closed due to contamination. Appropriate regulatory action would be taken against adulterated seafood found in commerce to prevent it from being consumed.

Page 5 – The Honorable Edward J. Markey

Thank you for sharing your concern with us. If we may be of further assistance, please let us know.

Sincerely,

A handwritten signature in cursive script, appearing to read "Jeanne Ireland".  
Jeanne Ireland  
Assistant Commissioner  
for Legislation

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May 27, 2010

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ROBERT E. LATTI, OHIO

Mr. Lamar McKay  
Chairman and President  
BP America, Inc.  
501 Westlake Park Boulevard  
Houston, TX 77079

Dear Mr. McKay:

On May 25, 2010, BP officials, including the Group Vice President for Safety and Operations and the leader of BP's internal investigation, briefed Committee staff on the progress of the company's investigation of the causes of the blowout and explosion at the Deepwater Horizon drilling rig in the Gulf of Mexico. Based on a post-incident review of data and witness statements, BP presented preliminary observations about multiple factors that could have contributed to the blowout and explosion. At this briefing, BP also provided the Committee with a 48-page document entitled "Washington Briefing: Deepwater Horizon Interim Incident Investigation." On May 26, BP sent the Committee a letter providing additional information about the well and the blowout.

We are concerned about issues that were omitted from BP's presentation and letter. In today's *New York Times* and *Wall Street Journal*, questions are raised about several decisions made by BP that could have led to well failure, including the decisions to use a type of casing that could allow gas to flow up the annular space to the wellhead, to limit the number of spacers centering the casing despite objections by Halliburton, and to curtail the length of time that drilling fluids were circulated to clean gas out of the well.<sup>1</sup> Neither BP's presentation nor its letter contains any discussion of these issues.

This raises the possibility that BP's internal investigation is not examining the consequences of BP's own decisions and conduct.

<sup>1</sup> *BP Decisions Set Stage for Disaster*, The Wall Street Journal (May 27, 2010); *BP Used Riskier Method to Seal Oil Well Before Blast*, The New York Times (May 27, 2010).



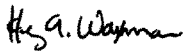
Mr. Lamar McKay  
May 27, 2010  
Page 2


The Committee's investigation is examining all potential causes of the blowout, including those that are the responsibility of BP. To assist the Committee in this investigation, we ask that you provide the Committee with additional information about the issues raised by *The New York Times* and *The Wall Street Journal*. Specifically, we request that you provide the Committee:

1. All documents related to BP's casing strategy for the Macondo well, including the decision to use a single casing line comprised of sections attached to one another from the sea floor to the oil reservoir;
2. All documents related to BP's decisions regarding the use and number of spacers centering the casing line prior to cementing; and
3. All documents related to BP's decision concerning how long to circulate drilling mud through the well on April 19, 2010, prior to cementing.

We ask that you provide these documents by Thursday, June 3, 2010. An attachment to this letter provides additional information on how to respond to Committee document requests. If you have questions regarding this request, please contact Meredith Fuchs or David Leviss of the Committee staff at (202) 226-2424.

Sincerely,

  
Henry A. Waxman  
Chairman

  
Bart Stupak  
Chairman  
Subcommittee on Oversight and  
Investigations

Enclosure

cc: The Honorable Joe Barton  
Ranking Member

The Honorable Michael Burgess  
Ranking Member  
Subcommittee on Oversight and  
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ROBERT E. LATTI, OHIO

May 31, 2010

Mr. Lamar McKay  
 President and CEO  
 BP America, Inc.  
 510 Westlake Park Boulevard  
 Houston, Texas 70779

Dear Mr. McKay:

I write to request information regarding statements that BP CEO Tony Hayward reportedly made yesterday, in which he asserted<sup>1</sup> that all oil being spewed from the gushing Deepwater Horizon well is on the surface of the ocean, and not dispersed in vast, undersea plumes as some independent scientists have found.

As you know, several scientists have independently found large volumes of oil under the surface of water, and some have speculated that these may have been formed as a result of the use of dispersants sub-surface. For example, the University of South Florida College of Marine Science recently reported<sup>2</sup> that it found a 22 mile long undersea plume of dispersed oil at a location that raised concern about its proximity to the food chain for sea life in the waters of Florida. Other researchers have found similar evidence of such plumes.

However, according to media reports, Mr. Hayward stated yesterday that BP's samples showed "no evidence" that oil was suspended sub-surface in this manner, going on to state that:

"The oil is on the surface. Oil has a specific gravity that's about half that of water. It wants to get to the surface because of the difference in specific gravity."

<sup>1</sup> "Oil could spew until August, officials say," *Washington Post*, May 31, 2010

<sup>2</sup> <http://www.cbsnews.com/stories/2010/05/28/national/main6527696.shtml>

The confirmation of the presence of large quantities of oil sub-surface could help to inform clean-up and response efforts, and it is vital that there is unfettered access to all relevant data or analysis. Consequently, I ask that you provide me with the following:

- 1) Copies of all measurements, calculations or other supporting materials on which Mr. Hayward based his statements regarding the existence of sub-surface plumes of oil (including indications of BP's methodology or any observational equipment used).
- 2) Any additional information on which Mr. Hayward based his statements.

Please provide these materials to me no later than close of business on Friday June 4, 2010. If you have any questions or concerns, or to arrange for delivery of the requested materials, please have your staff contact Dr. Michal Freedhoff of the Energy and Environment Subcommittee staff at 202-225-2836.

Sincerely,



Edward J. Markey  
Chairman  
Subcommittee on Energy and Environment

Cc: Chairman Henry Waxman  
Ranking Member Joe Barton  
Ranking Member Fred Upton

WILMERHALE

June 7, 2010

Anne Harkavy

The Honorable Edward J. Markey, Chairman  
 Subcommittee on Energy and Environment  
 Committee on Energy and Commerce  
 United States House of Representatives  
 2125 Rayburn House Office Building  
 Washington, DC 20515-6115

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 +1 202 663 6363(f)  
 anne.harkavy@wilmerhale.com

Re: Response to Chairman Markey's Correspondence Dated May 31, 2010, to Mr. Lamar McKay, President and CEO of BP America, Inc.

Dear Chairman Markey:

I am writing on behalf of BP America, Inc. in response to your May 31, 2010 letter to Mr. Lamar McKay, its Chairman and President, in which you requested information and documents concerning potential sub-surface concentrations of oil in connection with the incident in the Gulf of Mexico involving the *Deepwater Horizon* oil rig. BP appreciates the importance of providing reliable and timely information regarding water quality and chemistry gathered in connection with the incident.

In response to your request, we are producing the following data that relate to the distribution of subsurface hydrocarbons in the areas sampled, and as of the dates sampled (last on May 29, 2010): (1) summary reports of water quality data collected by scientists from BP, NOAA and the EPA [BP-HZN-CEC020556 – BP-HZN-CEC020604 and BP-HZN-CEC02611 – BP-HZN-CEC02617]; and (2) the initial NOAA and EPA May 10, 2010 sampling directive under which the data were collected [BP-HZN-CEC020605 – BP-HZN-CEC020610]. BP has been posting these summaries on its website,<sup>1</sup> and the underlying data and amendments to the sampling directive are available at the EPA's spill response website.<sup>2</sup> BP, NOAA and the EPA continue to monitor water quality and chemistry in the Gulf. BP, in collaboration with these government agencies, will continue to gather this observational data and publish it on its website.

BP has not yet seen the observational data underlying the reports referred to in your letter and would not be in a position to comment on that data until it is made public or otherwise provided and can be reviewed.

<sup>1</sup> <http://www.bp.com/sectiongenericarticle.do?categoryId=9033792&contentId=7062347>

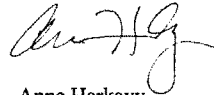
<sup>2</sup> <http://www.epa.gov/bpspill/dispersants.html>

WILMERHALE

Hon. Edward J. Markey, Chairman  
June 7, 2010  
Page 2

If you have any questions, or require additional information, please feel free to contact me or to have your staff contact Liz Reicherts at (202) 457-6585.

Sincerely,

A handwritten signature in black ink, appearing to read "Anne Harkavy", with a stylized flourish at the end.

Anne Harkavy

Enclosures

cc: Chairman Henry Waxman  
Ranking Member Joe Barton  
Ranking Member Fred Upton

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 ROBERT E. LATTI, OHIO

May 31, 2010

Mr. Lamar McKay  
 President and CEO  
 BP America, Inc.  
 510 Westlake Park Boulevard  
 Houston, Texas 70779

Dear Mr. McKay:

Last week, on May 24, I wrote a letter to you regarding the need for BP to maintain complete transparency regarding its operations to stop the flow of oil at the Deepwater Horizon accident site, 5000 feet beneath the surface of the Gulf of Mexico. As I noted in that letter, BP is capturing live footage from multiple cameras at the accident site and in order to get a clear picture of the true situation, the American public and the news media needs to be able to see all cameras operating in real time, in the same way that BP executives and engineers, and others involved in accident operations, are able to see such operations. There is no excuse for not providing us this basic information.

The need for such information was apparent during the recent "top kill" operation, when BP suspended pumping of mud at certain points of the project, attempted to use "bridging material" as part of a "junk shot" and made numerous other tactical decisions during the process, without providing clarity to the public and news media at the time such decisions were happening. That is unacceptable, given the very high stakes involved in this disaster and the right we all have to know whether your actions are proceeding according to plan and as projected. There cannot be any delay or gaps in our understanding of this situation, given that thousands of barrels of oil are spewing forth each day into the gulf, with catastrophic long-term consequences.

Therefore, I am reiterating my request that, from now on, all cameras be made available in live streaming feed to the public and news media. In this regard, I note that

the view of the feed does not always seem to include all cameras, since at times camera shots appear on the single live feed that is publicly available, but do not also appear on the multi-camera view screen you have provided to me. BP should not be controlling the view the American public has of this disaster in our ocean.

Yesterday, BP Executive Bob Dudley suggested that the severing of the broken marine riser from the blowout preventer would likely not change "significantly" the rate of oil flowing from the well. However, government representatives, including Assistant to the President, Carol M. Browner, have suggested that severing of the riser pipe could increase the flow by up to 20%. As I have communicated to you repeatedly, getting an accurate estimate of the flow rate is essential in ensuring an appropriate spill response—therefore it is equally essential that video data be available to us all, including the flow rate technical group and other outside experts, for full evaluation of the true situation. All parties need to see for themselves in real time the effects of the severing of the pipe and to be able to continue to monitor that situation throughout the crisis.

I want to continue to make clear that in seeking such live video feed, I do not want to compromise operations or affect the integrity of the video feed. However, I believe that the streaming that you have provided to date has demonstrated that you are able to provide such feeds without any such effects.

Finally, I am reiterating my request that all video be time-stamped and dated, available in easy to access, multiple formats and that it all be archived, with the archived footage being provided to me as soon as possible. It was my understanding from your staff that such archived footage would be provided to me immediately after the "top kill" operation. I have not received any such footage. As we continue to investigate all aspects of BP's response to this crisis, in the days and weeks ahead, access to this information will be critical to ensuring that we have nothing less than the complete picture.

I would appreciate your prompt response to this letter.

Sincerely,



Edward J. Markey  
Chairman  
Subcommittee on Energy and  
Environment

Cc: Chairman Henry Waxman  
Ranking Member Joe Barton  
Ranking Member Fred Upton

WILMERHALE

Tonya Robinson

June 14, 2010

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The Honorable Edward J. Markey, Chairman  
Subcommittee on Energy and Environment  
Committee on Energy and Commerce  
United States House of Representatives  
2125 Rayburn House Office Building  
Washington, DC 20515-6115

Re: Response to Chairman Markey's Correspondence Dated May 31, 2010, to Mr. Lamar McKay, Chairman and President of BP America, Inc. Concerning ROV Cameras

Dear Chairman Markey:

I am writing on behalf of BP America, Inc. ("BPA") in response to your May 31, 2010 letter to Mr. Lamar McKay, in which you requested that live streaming feeds from cameras mounted on all the remotely operated vehicles ("ROVs") operating on the sea floor be made available to the public and news media. BPA shares your commitment to transparency and, after working on a method to enable the public to view these live feeds, began streaming live feed from all twelve cameras on June 2, 2010. Enabling these views has required technical modifications, and, further, BPA has had to make these system enhancements carefully so as not to interrupt critical operations. It is important to note that these ROVs are used when needed for operations and there may be points in time when not all ROVs will be active.

You also inquired about the availability of a time-stamp on the recorded images. We understand that all archived recordings from the ROVs include time-stamps. However, some of the ROVs are configured not to *transmit* their time-stamp via satellite, in part because of satellite bandwidth limitations. In these instances, the time-stamps do not appear on the public video feeds. We understand that changing the configuration on those ROVs to transmit their time-stamp would require an interruption to operations.

In addition to the live feed, BPA has made a concerted effort to explain its operations to the public. For example, BPA made available explanatory videos for both Top Kill and Lower Marine Riser Package Cap operations. Senior executives have appeared at press conferences and on numerous television broadcasts and interviews explaining operations and answering questions. The Incident Command has conducted numerous press conferences explaining the operations, and BPA continues to support these events with information and briefings to Admiral Allen and others. Moreover, BPA will continue to respond to any requests for information from the Flow Rate Technical Group, including archived video necessary to complete its work.

In addition to the video provided to you on June 9, 2010, we are providing with this letter a copy of the available, archived video through the time when the live video feed was provided

Wilmer Cutler Pickering Hale and Dorr LLP, 1875 Pennsylvania Avenue NW, Washington, DC 20006  
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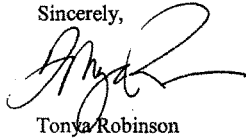
WILMERHALE

Hon. Edward J. Markey, Chairman  
June 14, 2010  
Page 2

to your office. Enclosed is the available footage from April 30 to May 6, which includes recordings of video captured from ROVs and live feeds. We also are including hard drives that contain a copy of the live stream from May 6 through May 18, 2010.

Thank you for the opportunity to respond to your inquiry. If you have any questions or require additional information, please feel free to contact me directly or Liz Reicherts at (202) 457-6585.

Sincerely,

A handwritten signature in black ink, appearing to read 'Tonya Robinson', with a stylized flourish extending from the end.

Tonya Robinson

Enclosures

cc: Chairman Henry Waxman  
Ranking Member Joe Barton  
Ranking Member Fred Upton



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## June 6, 2010: Markey to BP: 10,000 Barrels a Day Captured...Out of What?

*Hayward, BP Pushed by Chairman to Ascertain Better Overall Flow Number*

WASHINGTON (June 6, 2010) -- Following claims that the new containment method is capturing 10,000 barrels a day, and comments from BP CEO Tony Hayward indicating BP expects to eventually capture "the vast majority" of the oil, Rep. Edward J. Markey today sent a letter to BP asking for clarification on the total amount of oil that is coming out of the well. Rep. Markey, who has continually pressed for better numbers on the size of the oil gusher, said the government and the American people need to know the true size of the leak to coordinate a proper response and to correctly calculate BP's potential fines that would result from the spilled oil.

Rep. Markey also queried BP on whether the company took efforts to measure the flow after the cutting of the sunken riser pipe, but before the current containment system was put in place. He also asked what BP plans to do with the siphoned oil.

**"At this time, BP appears to know how much oil is being captured, which is encouraging. Yet BP still does not appear to know precisely how much oil is actually escaping, which is discouraging,"** writes Rep. Markey in the letter to BP America CEO Lamar McKay. Rep. Markey chairs the Energy and Environment Subcommittee in the Energy and Commerce Committee and the Select Committee on Energy Independence and Global Warming. **"Estimating the size of the spill at the source, instead of when it approaches the shore, continues to be the best way to gauge the leak."**

Rep. Markey notes in the letter that a proper flow rate can help inform the Obama administration's coordinated efforts to respond to BP's spill. He also reminds BP in the letter that they will face potential fines of up to \$4,300 per barrel of oil spilled.

The letter to BP is pasted below:

June 6, 2010  
Mr. Lamar McKay  
President and CEO,  
BP America, Inc.  
501 Westlake Park Boulevard  
Houston, Texas, 70779

Dear Mr. McKay:

BP has now completed severing the broken riser pipe from the Deepwater Horizon well and has placed a cap on the top of the blowout preventer. BP has now begun to collect oil through this cap. However, as is evident from the live video feeds being shot on the ocean floor, substantial quantities of oil continue to escape from around the sides of the cap and from vents on the cap. These video feeds have also shown BP applying subsea dispersant into the gushing oil plumes escaping from around the cap.

The critical question at this time is: "how much oil is escaping into the environment?" BP CEO Tony Hayward has indicated that the cap is capturing 10,000 barrels per day. Mr. Hayward has also indicated

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that he expects soon to be able to capture "the vast majority" of the oil spewing from the well. However, conservative official estimates of the flow rate indicated that prior to the severing of the riser, somewhere between 12,000-19,000 barrels of oil were flowing from the well. In addition, government officials have suggested that by severing the kinked and broken riser pipe, flow rates could increase by up to 20 percent.

At this time, BP appears to know how much oil is being captured, which is encouraging. Yet BP still does not appear to know precisely how much oil is actually escaping, which is discouraging. Estimating the size of the spill at the source, instead of when it approaches the shore, continues to be the best way to gauge the leak. We need to know the amount of total oil flowing from the well, taking into account both the amount of oil being collected, and the amount being released into the ocean environment. This is critical, not only in terms of the efficacy of the temporary cap solution, but also in terms of the size and extent of the needed spill response and the ultimate effects on the environment. Finally, accurate flow rate information will be required to determine BP's financial liability in terms of fines, which could be as high as \$4,300 per barrel.

Therefore please answer the following questions immediately:

- 1) What is the total estimated volume of oil flowing from the well, taking into account both the amount of oil being captured and the amount of oil that is being released into the ocean? What is the basis for this estimate?
- 2) Prior to placement of the cap, but after complete severing of the riser pipe, did BP estimate the volume of flow from the well? Did BP determine whether the severing of the riser pipe did, in fact, increase the overall amount of flow? If so, by what percentage did the flow increase? If not when will BP perform this calculation? Please take account of any such calculation in the answer to question 1.
- 3) With regard to the estimate of 10,000 barrels of oil per day being recovered, is the material being recovered at the surface just oil or is it a mix of oil, seawater and other materials? How does the answer to this question affect your response to question 1? Is the 10,000 barrels per day estimate for just oil?
- 4) What is BP going to do with the oil it is recovering?

Sincerely,  
Edward J. Markey

Chairman  
Energy and Environment Subcommittee  
Energy and Commerce Committee

CC: Honorable Henry Waxman, Chairman  
Honorable Joe Barton, Ranking Member  
Honorable Fred Upton, Ranking Member

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WILMERHALE

June 14, 2010

David S. Molot

The Honorable Edward J. Markey  
 Chairman  
 Subcommittee on Energy and Environment  
 Committee on Energy and Commerce  
 U.S. House of Representatives  
 2125 Rayburn House Office Building  
 Washington, DC 20515-6115

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 david.molot@wilmerhale.com

**Re: Response to Chairman Markey's Correspondence, Dated June 6, 2010, to  
 Mr. Lamar McKay, President and CEO of BP America, Inc.**

Dear Chairman Markey:

I am writing on behalf of BP America, Inc. ("BP") in response to your June 6, 2010 letter to Mr. Lamar McKay requesting further information on the flow of oil from the damaged wellhead in the Gulf of Mexico. In the spirit of cooperation and transparency, BP is providing the following responses to your questions.

- 1. What is the total estimated volume of oil flowing from the well, taking into account both the amount of oil being captured and the amount of oil that is being released into the ocean? What is the basis for this estimate?**

The federal government created a Flow Rate Technical Group ("FRTG"), comprised of members of the scientific community and government agencies, to provide further specificity on flow rate. Consistent with its stated commitment to transparency and cooperation, BP has provided the FRTG with data showing release points and amounts of oil and gas currently being collected on the surface, as well as subsea video of the oil release to assist with FRTG's efforts. To date, estimates regarding the rate of oil flowing from the well have been developed either by the Unified Command (in the initial weeks following the spill) or FRTG. BP is unaware of any means of precisely calculating the total estimated volume of oil flowing from the well.

Estimates of the amount of oil being captured from the top of the Deepwater Horizon's blowout preventer can be found on [www.bp.com](http://www.bp.com). These totals are updated every twelve hours.

- 2. Prior to placement of the cap, but after complete severing of the riser pipe, did BP estimate the volume of flow from the well? Did BP determine whether the severing of the riser pipe did, in fact, increase the overall amount of flow? If so, by what percentage did the flow increase? If not when will BP perform this calculation? Please take account of any such calculation in the answer to question 1.**

Prior to severing of the riser pipe from the top of the Deepwater Horizon's blowout preventer, BP analyzed the potential of that action to increase the rate of oil flowing from the well based on a number of possible well flow and pressure scenarios. All estimates regarding

WILMERHALE

The Honorable Edward J. Markey, Chairman  
 June 14, 2010  
 Page 2

flow rate, however, have been developed either by the Unified Command or by FRTG. BP will continue to respond to any inquiries from United States Coast Guard National Incident Commander Admiral Thad Allen and United States Geological Survey Director Dr. Marcia McNutt on this issue.

3. **With regard to the estimate of 10,000 barrels of oil per day being recovered, is the material being recovered at the surface just oil or is it a mix of oil, seawater and other materials? How does the answer to this question affect your response to question 1? Is the 10,000 barrels per day estimate for just oil?**

The material being recovered at the surface as a result of placement of the Lower Marine Riser Package Containment cap is a mixture of oil, natural gas, and methanol. The 10,000 barrels per day estimate accounts for oil as well as a small amount of methanol.

Estimates of the amount of oil being captured from the top of the Deepwater Horizon's blowout preventer can be found on [www.bp.com](http://www.bp.com). These totals are updated every twelve hours. As noted above, estimates regarding the rate of oil flowing from the well have been developed either by the Unified Command or FRTG.

4. **What is BP going to do with the oil it is recovering?**

The oil being recovered from the spill in the Gulf of Mexico is currently being stored on the Discoverer Enterprise following its separation from gas. As part of its commitment to restore the environment and habitats in the Gulf Coast region, BP will donate the net revenue from the sale of recovered oil (i.e., the total revenue generated from sales minus payment of royalties to the U.S. Government and co-owners of the leasehold interest) to create a new wildlife fund to create, restore, improve and protect wildlife habitat along the coastline of four Gulf states: Louisiana, Mississippi, Alabama, and Florida. These funds, in turn, will be made available to state agencies and non-profits that are focused on wildlife protection and restoration. BP's creation of the fund goes beyond BP's obligations under the Oil Pollution Act of 1990.

\* \* \* \* \*

Thank you for the opportunity to respond to your concerns. If you have any questions, please feel free to contact me or to have your staff contact Liz Reicherts at (202) 457-6585.

WILMERHALE

The Honorable Edward J. Markey, Chairman  
June 14, 2010  
Page 3

Sincerely,

Handwritten signature of David Molot in cursive script.

David Molot

cc: Chairman Henry Waxman  
Ranking Member Joe Barton  
Ranking Member Fred Upton

HENRY A. WAXMAN, CALIFORNIA  
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June 8, 2010

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ROBERT E. LATTI, OHIO

Mr. Lamar McKay  
President and CEO,  
BP America, Inc.  
501 Westlake Park Boulevard  
Houston, Texas, 70779

Dear Mr. McKay:

BP is now collecting oil through a cap placed on the top of the blowout preventer at the Deepwater Horizon/ Macondo well accident site. However, as is evident from the live video feeds being shot on the ocean floor, substantial quantities of oil continue to escape from around the sides of the cap and from vents on the cap.

One question that remains unanswered is the rate at which oil is still spilling into the Gulf of Mexico. BP is stating that the cap is capturing 10,000 barrels a day and the Coast Guard is moving another ship into the area to increase containment capacity to nearly 20,000 barrels per day. Conservative flow-rate estimates indicate that the flow rate before the riser was severed was between 12,000 and 19,000 barrels per day, with the potential for a 20 percent increase in flow after removing the kinked and broken riser pipe.

As my letter yesterday stated, I am concerned that we still do not know the total amount of oil that is flowing out of the well. Experts will be able to determine the current total flow rate if they have access to archived high quality video of the period after the riser was severed and before the cap was installed.

It has come to my attention that the Flow Rate Technical group has not yet received archived video data for this period. Since I have previously requested that you archive all video, I expect that you have stored a copy of all the chronological video feeds. Any

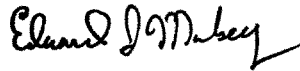
efforts on your part to prevent experts from determining the size of this spill is unacceptable.

I request that you immediately release the archived video to the Flow Rate Technical Group and to me so that the size of this spill can be determined. Five days have passed since BP severed the riser. We need to know the amount of total oil flowing from the well to determine the efficacy of the temporary cap solution and to know the size and extent of the needed spill response.

Therefore, please provide to me and the flow rate technical group, archived, high-quality video showing the flow of oil from the top of the blowout preventer, after the point in time when the riser pipe was completely severed and prior to placement of the temporary cap.

In order to be able to assess the ongoing situation in real time I request that you release this video within 24 hours of receipt of this letter. I would ask that such video be of the highest possible quality and that it include all available camera angles.

Sincerely,

A handwritten signature in black ink, appearing to read "Edward J. Markey", with a stylized flourish at the end.

Edward J. Markey  
Chairman  
Energy and Environment  
Subcommittee  
Energy and Commerce Committee

CC: Honorable Henry Waxman, Chairman  
Honorable Joe Barton, Ranking Member  
Honorable Fred Upton, Ranking Member



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## Congress of the United States

### House of Representatives

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June 10, 2010

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STEVE SCALISE, LOUISIANA

PARKER GRIFITH, ALABAMA

ROBERT E. LATTI, OHIO

Mr. Lamar McKay  
President and CEO,  
BP America, Inc.  
501 Westlake Park Boulevard  
Houston, Texas, 70779

Dear Mr. McKay:

BP is now reportedly collecting 15,000 barrels of oil per day through a cap placed on the top of the blowout preventer at the Deepwater Horizon/ Macondo well accident site. However, as is evident from the live video feeds being shot on the ocean floor, substantial quantities of oil continue to escape from around the sides of the cap and from vents on the cap.

While conservative estimates indicate that the lower bound of the flow rate before the riser was severed was between 12,000 and 19,000 barrels per day, questions remain about the upper bound of the flow rate estimate. Some members of the Flow Rate Technical Group have said that the maximum flow could be much higher.

As one example, Dr. Steve Wereley of Purdue University, who is on the Flow Rate Technical Group, has said that the size of the spill could be more than 40,000 barrels of oil per day.

I and other members of Congress have now received high-definition footage of the spill site, and understand that scientists on the flow rate team have also received this footage. This footage includes the important time period between when the riser was cut and removed and when the current cap system was installed.

While this footage has helped these independent scientists to better estimate the size of this spill, they will provide only an approximation. To get the most accurate flow-rate possible, direct measurements are needed.

During discussions my staff have held with Dr. Ira Leifer of the Marine Sciences Institute at the University of California-Santa Barbara, who is on the Flow Rate Technical Group, it has come to my attention that there is an upcoming potential opportunity to reach such an accurate assessment. BP has indicated that there is a plan to place a larger containment cap on the well in the next couple of weeks to capture more of the oil gushing from the site.

During the switching of the cap, an experiment could be conducted to better measure the size of the flow. The experiment would consist of injecting fluorescent dye into the oil stream, which would allow scientists to better estimate how fast the gusher is moving and thus the total quantities of oil, gas, and other materials leaving the well. The scientific methods for this activity are well-developed and have been published in peer-reviewed scientific journals.

Scientists could be at the well site within one week with their equipment, provided the proper budget. The measurement would take only a couple hours. Monitoring equipment could be left at the well site to provide an ongoing assessment of the spill, and would be safely installed away from BP's operations at the well.

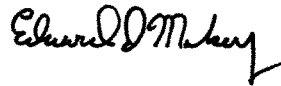
I want to emphasize that any efforts to measure the flow rate should not interfere with or delay any efforts to eliminate or limit the flow of oil. However, based on BP's plans as reported in the media, removal of the cap and placement of an additional cap may not take place for 2-3 weeks which should provide ample time to prepare for the flow rate measurements being proposed.

This measurement could help inform the ongoing effort to end the spill, which is the number one priority. There are concerns that, without the best information on the size and force of this gusher, that the effectiveness of the new containment cap and relief wells could be compromised. By knowing the true size of the spill, the robust response efforts currently being coordinated by the Obama administration can also be aided.

My understanding is that BP has not yet responded to Dr. Leifer's request to make direct flow measurement. Therefore, I encourage you to immediately engage with Dr. Leifer and other members of the Flow Rate Technical Group to explore the opportunity this new strategy presents. I request that you provide whatever budget and ROV access is needed to allow these scientists to deploy their measurement activities and allow them full and safe access to the spill site at the sea floor to conduct this measurement.

As you know, BP will be fined for every barrel of oil spilled during this disaster. The residents of the Gulf of Mexico and all Americans deserve a true understanding of the size of what is already the worst environmental disaster in U.S. history.

Sincerely,

A handwritten signature in black ink, appearing to read "Edward J. Markey", with a stylized flourish at the end.

Edward J. Markey  
Chairman  
Energy and Environment  
Subcommittee  
Energy and Commerce Committee

CC:  
Admiral Thad Allen, USCG  
Honorable Henry Waxman, Chairman  
Honorable Joe Barton, Ranking Member  
Honorable Fred Upton, Ranking Member

WILMERHALE

June 13, 2010

David S. Molot

The Honorable Edward J. Markey  
 Chairman  
 Subcommittee on Energy and Environment  
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 2125 Rayburn House Office Building  
 Washington, DC 20515-6115

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 david.molot@wilmerhale.com

**Re: Response to Chairman Markey's Correspondence, Dated June 10, 2010, to  
 Mr. Lamar McKay, President and CEO of BP America, Inc.**

Dear Chairman Markey:

I am writing on behalf of BP America, Inc. ("BPA") in response to your June 10, 2010 letter to Mr. Lamar McKay requesting that BPA engage with members of the Flow Rate Technical Group ("FRTG") in its efforts to measure the flow rate of oil from the damaged wellhead in the Gulf of Mexico.

BPA very much appreciates the importance of providing accurate and timely information regarding flow rate. To the best of its knowledge, and consistent with its stated commitment to transparency and cooperation, BPA has provided to the FRTG all the information it has requested to date. BP will, of course, respond to any requests received from the FRTG in the future.

Thank you for the opportunity to respond to your concerns. If you have any questions, please feel free to contact me or to have your staff contact Liz Reicherts at (202) 457-6585.

Sincerely,

*David Molot*  
 /s/ *DM*

David Molot

cc: Chairman Henry Waxman  
 Ranking Member Joe Barton  
 Ranking Member Fred Upton

H. Lamar McKay, Chairman & President, BP America responses for  
 US House Energy and Commerce Subcommittee on Energy and Environment  
 Pre-hearing Questions  
 June 15, 2010  
 Submission date: June 13, 2010

1. Please detail the capital investments BP has made in oil and gas exploration in each of the last three fiscal years? Of these investments, please detail how much was spent on exploration of new fields?

The table below details BP's worldwide capital expenditures for exploration and production.

| <b>Exploration &amp; Production Capital Expenditures and Acquisitions (\$ millions)</b> | <b>2007</b> | <b>2008</b> | <b>2009</b> |
|---|-------------|-------------|-------------|
| BP plc  | 14,207      | 22,227      | 14,896      |

The table below details BP's worldwide exploration and appraisal costs on new fields.

| <b>Exploration and Appraisal Costs (\$ millions)</b> | <b>2007</b> | <b>2008</b> | <b>2009</b> |
|--|-------------|-------------|-------------|
| BP plc   | 1,892       | 2,290       | 2,805       |

2. How much money has BP invested in each of the last three fiscal years on research and development generally? Of these research and development investments, how much was focused on the research and development of safer offshore drilling technologies? How much was focused on technologies related to rig safety and accident prevention? How much was focused on spill response technologies? How much was focused on research regarding renewable and alternative energy sources? Please break down that investment by renewable energy type (e.g., wind, solar, etc.).

| <b>Research and Development expenditure (\$ millions)</b> | <b>2007</b> | <b>2008</b> | <b>2009</b> |
|---|-------------|-------------|-------------|
| BP plc  | 566         | 595         | 587         |

BP has spent roughly \$600 million per year on R&D. Currently, exploration and production accounts for roughly 40% of BP's R&D expenditures, refining and marketing is 35% and alternative energy makes up the remaining 25%. The share dedicated to alternative energy reflects the growing potential of AE in BP's energy portfolio. The figures below do not include amounts spent on technical excellence, field trials or demonstration projects, which together are approximately equal to reported R&D spend.

| <b>Alternative Energy R&amp;D Expenditure (\$ millions)</b> | <b>2007</b> | <b>2008</b> | <b>2009</b> |
|---|-------------|-------------|-------------|
| Solar   | 7           | 10          | 11          |
| Wind  | 1           | 5           | 5           |
| Bioscience (including biofuels)                             | 27          | 58          | 100         |
| Carbon Capture & Storage                                    | 10          | 13          | 14          |
| Other (not renewables)                                      | 4           | 13          | 12          |
| BP plc  | 50          | 99          | 141         |

Safety is embedded in everything that we do, thus much of our capital and operating spend incorporates elements of safety.

By the narrow definition of R&D as a distinct program and set of accounts, E&P R&D contains several programs that focus on safety and reliable offshore operations including drilling. The program on drilling technology is focused on measurement by drilling, downhole gas detection and resistivity ahead of bit. The total spent in this area over the last 3 years is approximately \$29M.

However, this amount does not cover the full amount of R&D embedded in our spend and that of our contractors. By way of example, BP's Thunderhorse production facility contains hundreds of technology firsts in well completions, subsea and topsides facilities which in total cost several billion to develop, manufacture and install over a period of 10 years. None of these expenditures were accounted for as BP's R&D but BP nonetheless paid suppliers to develop them. Additionally, we work with suppliers in the design and development of safe drilling equipment. BP's contribution to these efforts is not classified as R&D.

3. How much has BP invested in deployment of renewable or alternative energy in each of the last three fiscal years? Please break that down that investment by renewable energy type (e.g. wind, solar, etc.). What proportion of your revenue is currently derived from renewable or alternative energy production?

| <b>Alternative Energy Capital Expenditure and Revenue Investment (\$ millions)</b> | <b>2007</b> | <b>2008</b> | <b>2009</b> |
|--|-------------|-------------|-------------|
| Solar  | 146         | 187         | 80          |
| Wind   | 336         | 586         | 874         |
| Biofuels   | 0           | 235         | 218         |
| Other (not renewables)   | 0           | 107         | 87          |
| BP plc   | 482         | 1,115       | 1,259       |

| <b>Alternative Energy Revenue (\$ millions)</b> | <b>2007</b> | <b>2008</b> | <b>2009</b> |
|---|-------------|-------------|-------------|
| BP plc  | 731         | 961         | 794         |

| <b>Total Revenue (\$ millions)</b> | <b>2007</b> | <b>2008</b> | <b>2009</b> |
|------------------------------------|-------------|-------------|-------------|
| BP plc                             | 284,365     | 361,143     | 239,272     |
| % Alternative Energy               | 0.26%       | 0.27%       | 0.33%       |

4. What steps do you believe the U.S. government and private industry should take to reduce the threat posed by climate change? Does BP support an economy wide cap on greenhouse gas emissions that includes transportation fuels? Would BP be able to pass any of the cost of purchasing emission allowances through its customers? If so, what percentage would be passed through?

BP supports a comprehensive climate and energy policy that includes development of all forms of energy (oil, natural gas, coal, nuclear, biofuels, wind, solar, etc.) and encourages efficiency and conservation.

BP supports an economy-wide price for carbon based on fair and equitable application across all sectors and believes that market based solutions, like a Cap and Trade or linked-fee are the best solutions to manage GHG emissions. These market-based approaches should be applied nationally for maximum environmental effectiveness at reducing emissions across the US economy, treat all energy consumers equitably, and facilitate investment in sustaining and creating jobs.

In a market-based carbon pricing system, BP believes in transparency and fair and equitable treatment to avoid misallocation of capital from one industrial sector to another. Fair and equitable treatment would generate a price signal on all forms of energy in a manner that:

- Will allow consumers to make informed choices and change their every day energy decisions
- Will drive the least cost solutions and reductions across the US economy
- Will provide companies the certainty that is necessary to drive technological advances and deployment.

Particular to our business, U.S. refineries are exposed to international competition and are currently operating in an over-capacity market, therefore it is critical that climate legislation treats refiners fairly otherwise we risk the

closure of more US refineries, an increase in product imports, and the loss of US jobs.

Additionally, we support a linked fee for transport fuels, because it imposes a transparent carbon price at the wholesale distribution point for fuels and levels the playing field for domestic refiners. Absent a linked fee mechanism, refiners would bear the obligation of acquiring allowances to cover the consumer use of transportation fuels. In a sector saddled with global overcapacity and weak consumer demand, this system could burden refiners with stranded costs that could be significant – making domestic refiners more uncompetitive in the globally traded refined product market. While the level of pass through can't be determined, it won't be 100%. Even at very high recovery rates, the stranded costs for BP could be several hundred million annually.

5. Is the view of BP that the world oil market is a free market where oil prices are dictated solely by supply and demand? If no, what other factors determine the global price of oil?

BP has long maintained that changes in oil supply and demand - and expectations of future supply/demand trends - are the principal drivers of oil prices. However, OPEC also influences prices by managing production levels as well as investment/production capacity. Moreover, many governments limit the ability of investors to access resources and adopt policies to shield consumers from price signals.

Earlier this decade, strong economic growth helped to push oil demand and prices higher – but government subsidies shielded consumers from these higher prices in many emerging-economies. The unprecedented increase in oil prices spanning seven consecutive years through 2008 was due in part to the strongest period of global economic growth in a generation. This trend ended when global recession cut demand causing a sharp decrease in oil prices. OPEC responded to lower demand by cutting oil production (beginning in September 2008 and continuing to this day) which led to a decline in global oil production last year (despite a large increase in US production). The recent resumption of economic growth has supported prices.

In addition, the adjustments of producers and consumers alike to price signals are complicated by the long lead times for investments in new production, and the long economic lives of oil-consuming equipment. While other factors, such as financial markets, may at times add momentum to price movements, we do not believe that they have been the principal driver of oil price movements in recent years.



6. How many offshore leases does your company hold under the Deep Water Royalty Relief Act that are not subject to the suspension of royalty relief based on market price? How much does BP project to avoid in royalty payments on these leases over the next five years and over the next twenty-five years?

BP holds 760 deepwater leases in the Gulf of Mexico. Of this total, 37 leases are subject to deepwater royalty relief which does not depend on market price.

It is difficult to estimate the amount of future royalty relief that may be associated with these 37 leases. Some of these leases are associated with fields which are currently operating. Others are associated with potential new developments, some near term and others long term. The amount of royalty relief that can be expected to be realized from these leases will be a function of several factors, including: the success and failure of exploratory and appraisal work, the scope and timing of new developments, the production from the fields once developed, market prices for oil and gas, and the price differentials between benchmark prices for oil and gas and what BP as a oil and gas seller would realize. The differential between benchmark oil and gas prices and those realized by the seller are themselves a function of oil quality and transportation charges, amongst other factors.

7. What impact would drilling by BP in the U.S. Atlantic and Pacific Outer Continental Shelf areas previously under moratoria have on U.S. motor gasoline prices in 2020 and 2030? What impact would it have on total U.S. oil production and consumption?

BP can't speculate on what changes may occur to gasoline prices over the next 20 years if new areas of the outer continental shelf were made available for development. However, we can comment on what we have seen in terms of development and the market's reaction to changes in US production of oil and gas over the last year. We believe these impacts are indicative of what could occur in the future due to changes in US supply and demand.

As detailed in the 2010 edition of the BP Statistical Review of World Energy, the United States had by far the largest increase in oil production in the world in 2009. US output rose by 460,000 b/d, or 7%. In addition, consumption fell for a fourth year in a row due to the combination of the recession and lingering impacts of high prices.

- According to the US DOE, US production growth last year was driven by increases in the Gulf of Mexico Outer Continental Shelf which grew by

390 Kb/d, triple the previous record growth. New fields and a light year for hurricane disruptions sustained this increment.

- With consumption declining and production increasing, US net oil imports fell sharply (-1.4 million b/d, or -12.6%). US (net) imports of 9.5 million b/d of oil (crude and refined products) in 2009 were the lowest since 1998. Net import dependence of 51% was the lowest since 1999.

US consumers benefitted from lower oil and natural gas prices in 2009.

Average US crude oil prices (WTI) declined by 38% in 2009, with prices reaching the lowest levels since 2005. The decline in prices was in large part due to lower US & global consumption, combined with increased non-OPEC supply.

US natural gas prices have also weakened, falling by 56% (Henry Hub) in 2009. Again, strong supply growth combined with weaker consumption helped to push US natural gas prices to record discounts relative to oil prices, and into a range competitive with coal.

8. Does BP support the elimination of the subsidies for oil and gas companies identified in the President's Budget Request for Fiscal Year 2011?

The oil and gas sector operates with tax policies and accounting principles available to all manufacturing sectors that create jobs and support capital investment. Many of these programs have been available for decades and are responsible for stimulating new development and production of oil and gas as well as making critical investments in refinery and other energy infrastructure. We operate in a global market for capital and development opportunities. An excessive increase in taxes, royalties and other government take will make the US less attractive as an investment opportunity. This will in the long run reduce US energy production, reduce the US revenue base as well as eliminate good, high-paying jobs.

BP recognizes the need for the US to raise additional revenue. We commit to work with policymakers on the broader areas of tax reform to ensure that any changes to the tax code do not jeopardize US energy and economic security and jobs.

9. How many deep water oil rigs does your company operate in the Gulf of Mexico; how many does it operate around the world? In which countries are these rigs located? What are the major differences in regulatory, royalty and tax policies between these countries that affect your operations and how do they compare to the United States?

BP currently has 4 deep water developments and prospects in the Gulf of Mexico where drilling rigs are operating. Three of these rigs are dedicated to the current Deepwater Horizon incident response (Transocean's Enterprise, Development Driller II and Development Driller III rigs). The remaining Gulf of Mexico deep water drilling rig is located on the Thunderhorse semi-submersible.

Worldwide, including the Gulf of Mexico, BP currently has 11 locations where deep water drilling rigs are operating. The countries of operation and rig count are as follows: USA, Gulf of Mexico - 4; United Kingdom - 2; Azerbaijan - 2; Norway - 1; Egypt - 1; and Angola - 1.

The number and location of deepwater drilling rigs will change as drilling programs change.

The regulatory and fiscal systems under which we operate vary from country to country. The US has adopted a concession system that provides ownership rights in natural resources in exchange for making bonus, rental, royalty and income tax payments to the government. In other countries, we operate under production sharing agreements in which we receive a variable share of the resource that is produced (depending on the prevailing price level) as well as pay bonus and income tax payments. In yet other countries, instead of taking title to the resource we receive a fee based on the amount produced.

10. What dispersants does BP have stores of and why were they selected? How much of each formulation do you have? Where are the stores kept? What are the logistical and implementation challenges, if any, associated with changing types of dispersants?

As of June 9, 2010, BP has an inventory of Corexit EC9500A and Sea Brat #4. Corexit, a dispersant that has been expressly approved in the National Contingency Plan Product Schedule (NCPSP) maintained by the EPA, was the only dispersant that was available immediately, in sufficiently large quantities, to be useful at the time of the spill associated with the Deepwater Horizon incident.

BP has also obtained small samples of 100 gal or less of other dispersants in order to perform further toxicity and efficacy tests and anticipates providing a recommendation on their possible role as alternates to Corexit EC9500A to the EPA by June 25, 2010.

Any changeover would require typically a week to secure supply agreements and for production to start and another week to establish and transit an initial

stock of the dispersant to support the response effort. Any changeover in dispersant would require between 24 and 48 hours for vessel and aircraft equipment clean-out and recalibration.

Our dispersant inventory and locations are:

Corexit 9500

89,000gal @ Port Fuchon, LA - 47,000gal at Sea on the Skandi - 22,000 gal inbound to Pt Fuchon from Nalco

52,500 gal at Houma Airport, LA

187,000 gal @ Stennis Airport, Miss 31,000 inbound to Stennis from Nalco Fri-Sat.

Sea Brat #4

100,000gal @ Amelia, LA

11. Does BP conduct any evaluations regarding the efficacy or the toxicity of dispersants and if so what are the results?

In accordance with EPA's Monitoring and Assessment Directive for subsea dispersant use, BP has committed to:

- a. Minimize as much as possible the use of dispersants while meeting the objectives of the Unified Area Command response, including deploying less than 15,000 gallons subsurface application per calendar day.
- b. Review the scientific literature for case studies on the actual use of dispersants, their efficacy and the impact their use had on the environment.
- c. Continue our search for an alternative dispersant that is available, effective and less toxic.

We have evaluated all dispersants on the EPA National Contingency Plan Product schedule. While each of these dispersants have been approved for use by the EPA, our evaluation reviewed the availability of sufficient volumes for practical application, the acute and chronic toxicity based on published data, and the effectiveness in laboratory and field tests.

In our initial assessment of alternatives, 12 of the 13 alternatives to Corexit EC9500A, were removed from consideration due to either a lack of

availability, higher toxicity than Corexit EC9500A, or the presence of compounds that may contain nonylphenol (NP), an endocrine disruptor.

The remaining alternative, Dispersit SPC 1000, has a lower toxicity than Corexit EC9500A, but considerably higher than the criteria established by the EPA in its request for BP to find an alternative.

We are continuing to conduct additional toxicity and efficacy testing on Corexit EC9500A and potential dispersant alternatives in accordance with the testing protocols of the EPA Directive. We anticipate delivering a formal recommendation on June 25, 2010.

12. Does BP have a financial interest in or other relationship with any companies that manufacture or sell an EPA-approved dispersant?

BP is not aware of any financial or share ownership interest in any of the eleven companies that manufacture or sell an EPA-approved dispersant. We are aware that a former executive of BP is currently serving as a non-executive director for Nalco, the manufacturer of Corexit EC9500A and EC9527A. The eleven manufacturers of EPA-approved dispersant will have past and current directors, officers and employees some of whom may have been directors, officers or employees of BP. These same eleven manufacturers will each have supply chains which may depend on petrochemical feedstocks which may be supplied by a BP company. BP's own supply chain encompasses approximately 40,000 suppliers who meet our oil and gas operational needs, and may include products sold by these manufacturers.

13. What recommendations does BP have for improving the safety of offshore drilling and the efficacy of oil spill response?

At the request of the Department of Interior, BP participated in the task forces that provided input to the Secretary concerning changes necessary to better insure the safety and integrity of offshore development. Additionally, based on the understanding we have gained thus far, we have offered the Secretary the following suggestions for consideration:

- Recall and recertify all BOPs that they operate to OEM specifications and can satisfy the well design intent;
- Implement an Enhanced Testing Regime which better simulates emergency operations;
- Evaluate redesigning BOPs with a focus on redundancy and reliability;
- Enhance Industry SubSea Response / Intervention Capability.

Additionally, BP has recently announced a 10 year research grant of \$500M to examine topics including:

- Where are the oil, the dispersed oil, and the dispersant going under the action of ocean currents?
- How do oil, the dispersed oil and the dispersant behave on the seabed, in the water column, on the surface, and on the shoreline?
- What are the impacts of the oil, the dispersed oil, and the dispersant on the biota of the seabed, the water column, the surface, and the shoreline?
- How do accidental releases of oil compare to natural seepage from the seabed?
- What is the impact of dispersant on the oil? Does it help or hinder biodegradation?
- How will the oil, the dispersed oil, and the dispersant interact with tropical storms, and will this interaction impact the seabed, the water column and the shoreline?
- What can be done to improve technology:
  - To detect oil, dispersed oil, and dispersant on the seabed, in the water column, and on the surface?
  - For remediating the impact of oil accidentally released to the ocean?

BP already has ongoing marine research programs in the Gulf of Mexico. Building on these, BP will appoint an independent advisory panel to construct the long term research program. Where appropriate, the studies may be coordinated with the ongoing natural resources damages assessment. The program will engage some of the best marine biologists and oceanographers in the world. More immediately, a baseline of information for the long term research program is needed. A first grant to Louisiana State University has been made to initiate this work.

**Congress of the United States**  
**Washington, DC 20515**

June 14, 2010

The Honorable Nick J. Rahall  
Chairman  
Committee on Natural Resources  
1324 Longworth HOB  
Washington, D.C. 20515

The Honorable James Oberstar  
Chairman  
Committee on Transportation and Infrastructure  
2165 Rayburn HOB  
Washington, D.C. 20515

The Honorable John Conyers, Jr.  
Chairman  
Committee on Judiciary  
2138 Rayburn HOB  
Washington, D.C. 20515

Dear Chairmen Rahall, Oberstar and Conyers:

On May 22<sup>nd</sup> President Obama signed an executive order creating the bipartisan National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling to investigate BP's devastating oil spill in the Gulf of Mexico.


While the President has committed the full cooperation of the federal government to the Commission and its mandate, he does not have the authority to give the Commission subpoena power. With the Commission expected to begin its investigation in the coming weeks, we strongly believe it must have subpoena power to ensure access to all the evidence it needs from BP, Transocean, Halliburton, and other private entities to undertake a complete inquiry on the causes of the spill and make meaningful recommendations on how to prevent similar disasters.

The need for subpoena power is certainly indicated by BP's wholly unsatisfactory response to the crisis. BP has tightly controlled the flow of information following this spill. It has regularly stonewalled requests by Members of Congress and outside researchers to provide accurate and timely information regarding a number of issues, including but not limited to, the concentration, composition, and even the amount of oil spilling into Gulf waters. Simply put, BP's behavior raises major doubts about its willingness to provide a full accounting of what went wrong to the Commission and the Commission simply will not be able to do its work without complete access to the information in BP's possession.

We have introduced legislation (H.R. 5481) to give the Commission subpoena power to ensure it can get to the bottom of the disaster that killed 11 workers and is devastating the Gulf of Mexico's environment and economy. We respectfully request you bring this legislation to the floor as soon as possible. Congress has previously granted subpoena power to presidential commissions investigating national crises, including the Warren Commission and the Three Mile Island Commission.

The people of the Gulf of Mexico and the nation deserve an explanation of all the circumstances and decisions that led up to this disaster. Only a comprehensive independent review — with subpoena power — will ensure the necessary lessons be learned, practices changed, and future disasters averted. We look forward to working with you to advance this legislation as quickly as possible to guarantee the Commission has the appropriate tools and resources it needs to get the job done.

Sincerely,

  
LOIS CAPPS  
Member of Congress

  
EDWARD MARKEY  
Member of Congress

cc: The Honorable Nancy Pelosi, Speaker  
The Honorable Steny H. Hoyer, Majority Leader



**Congress of the United States**  
Washington, DC 20515

June 14, 2010

Mr. Lamar McKay  
President and CEO,  
BP America, Inc.  
501 Westlake Park Boulevard  
Houston, Texas, 70779

Dear Mr. McKay:

It has been over 7 weeks since the BP Deepwater Horizon drilling rig began spewing oil into the Gulf of Mexico, creating a man-made environmental catastrophe of epic proportions. As millions of gallons of oil and gas are released into the already fragile marine ecosystem of the Gulf, the list of unknowns that surround the disaster's impact on the marine ecosystem and human health continue to grow.

On Thursday June 10th, the Subcommittee on Energy and Environment of the House Energy and Commerce Committee held a hearing to examine human exposure to and environmental fate of the oil, gas and chemical releases associated with the BP spill and related response efforts. At this hearing we heard from scientific experts who have been actively involved in evaluating the impacts of this spill. A common concern raised by all of the witnesses was the lack of access to relevant and comprehensive data, records and information that would permit assessment and evaluation by independent scientists.

To better understand the potential short- and long-term impacts of this unprecedented event, scientists from government agencies and other institutions must have access to all information that would allow them to assess the environmental and human impacts of the oil spill and all related mitigation efforts. I therefore ask that you respond to the following requests for information immediately:

1. Please provide the coordinates for all ships used for sampling that have been funded by BP as a part of the cleanup effort, including all independent contractors and recruited locals, since April 20, 2010. Please provide all data collected by these ships, including but not limited to rotifer toxicity, dead or stranded wildlife, methodology and associated data for monitoring or calculating the total volume of oil leaked and oxygen concentration/sampling.
2. Has BP sampled air and water to monitor for the presence of ingredients of the dispersants Corexit 9500 and 9527? If yes, what are the results of this sampling? If not,

why not? Please provide all data relating to the air and monitoring data, including the date the sample was taken, coordinates of sampling location, sampling equipment used and the limit of detection.

3. It is my understanding that 30,000 gallons of drilling mud was used in the failed "top kill" procedure and much of that found its way out of the pipes and into the ocean. It is my understanding, for example, that in addition to the synthetic oils and other chemicals that are used to make drilling mud, that BP may have included as much as 30% ethylene glycol, which is a common antifreeze, to ensure that methane hydrates didn't form during the procedure. Ethylene glycol is also toxic. To understand the potential effect the drilling mud may be having on the marine ecosystem, please list all ingredients that made up the drilling mud used in the failed "top kill" procedure.
4. How much methanol has BP pumped into the ocean as a part of the mitigation efforts? Is BP continuing to use methanol to prevent the formation of hydrates? If so, how much methanol is currently being used and how is that figure determined? If not, when did BP start and stop discharging methanol into the ocean? Please provide all measurements and data that pertain to methanol used in the mitigation effort.
5. What are the methane concentration measurements for the area surrounding the leak site? Please provide the date of measurement, sampling equipment used, coordinates for sample location, and limit of detection of the equipment.
6. Has BP been collecting monitoring data in accordance with OSHA standard 1910.120(h)(1)(i) regarding employee exposure to hazardous concentrations of hazardous substances? Please describe the methodology used to collect this data. What actions has BP taken in response to air quality measurements that exceeded the levels of concern or NIOSH recommended exposure limits?
7. There have been numerous reports of illness experienced by those responding to the BP spill, and given both the short-term and potential long-term health effects of exposure to oil, gas and dispersants, it may be important to monitor the health of these individuals well into the future. What procedures are you taking to maintain records of all BP workers, contractors and recruited local residents that are assisting in the cleanup of the oil spill? Do you maintain records of their contact information, dates that each individual worked, and how many hours were logged? Do you also maintain records of what type of cleanup activities each individual partook in and the type of personal protective equipment they were given (i.e. respirators, gloves, hazmat suits)? If BP is not currently maintaining this type of worker related information, I request that BP immediately begin to do so.

Sincerely,



Edward J. Markey  
Chairman  
Energy and Environment Subcommittee  
Energy and Commerce Committee



Lois Capps  
Member of Congress

CC: Honorable Henry Waxman, Chairman  
Honorable Joe Barton, Ranking Member  
Honorable Fred Upton, Ranking Member

WILMERHALE

July 23, 2010

**Benjamin A. Powell**  
Partner**BY ELECTRONIC DELIVERY**+1 202 663 6770(t)  
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ben.powell@wilmerhale.com

The Honorable Edward J. Markey  
Chairman  
Committee on Energy and Commerce  
Subcommittee on Energy and Environment  
U.S. House of Representatives  
2125 Rayburn House Office Building  
Washington, D.C. 20515

The Honorable Lois Capps  
U.S. House of Representatives  
1110 Longworth House Office Building  
Washington, D.C. 20515

**Re: Response to Correspondence from Chairman Markey and  
Representative Capps, Dated June 14, 2010, to Mr. Lamar McKay,  
Chairman and President of BP America, Inc.**

Dear Chairman Markey and Representative Capps:

I am writing on behalf of BP America, Inc. ("BPA") in response to your June 14, 2010 correspondence to Mr. Lamar McKay, Chairman and President of BPA, regarding the environmental impacts of the Gulf of Mexico spill and related worker health and safety issues. As part of BPA's commitment to providing information responsive to your requests in a timely manner, BPA is providing the attached responses to the questions you raised in your June 14 letter, as well as documents described in the attached.

Your third question requests the ingredients of the drilling mud used in the "top kill" procedure. BPA notes that by separate letter dated July 21, 2010 to the Energy and Commerce Committee, Subcommittee on Oversight and Investigations, Tony Hayward clarified a response he gave on this issue to one of Representative Markey's questions at the June 17, 2010 hearing of the Oversight and Investigations Subcommittee. The July 21 letter explained that, although Dr. Hayward correctly stated in his June 17 testimony that the drilling mud was water-based, he did not have before him at that time the list of ingredients actually used in the drilling mud for the top kill procedure. Dr. Hayward further clarified that, after giving testimony that the mud had no toxicity whatsoever, which he believed at the time to be accurate, he since learned that there could be an argument that certain of the ingredients may be toxic in certain circumstances. The letter also explained that, because the ongoing testing and monitoring of the environmental effects of the April 20 incident and associated response efforts has not yet concluded, it is not possible at this juncture to state definitively whether any toxic effects are or will be detected.

The Honorable Edward J. Markey  
The Honorable Lois Capps  
July 23, 2010  
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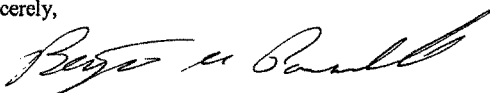
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BPA takes your concerns very seriously and is committed to taking the necessary steps to monitor and mitigate the environmental and health effects of the oil and dispersants on responders and residents of the Gulf Coast region. To provide responsive information in a timely fashion, BPA has endeavored to collect information from sources likely to have relevant data. These answers are based on information that is reasonably available at this time to BPA.

Today's production contains confidential, non-privileged business information, and BPA respectfully requests and understands that these documents will be maintained confidentially. If the Committee or Subcommittee is considering releasing any of these documents, BPA requests that it be given an opportunity to be heard on that question.

If you have any questions, please feel free to contact me directly or Liz Reicherts at 202-457-6585.

Sincerely,



Benjamin A. Powell

Attachment

**RESPONSE TO JUNE 14, 2010 INFORMATION REQUEST FROM THE HONORABLE  
EDWARD J. MARKEY AND THE HONORABLE LOIS CAPPS CONCERNING  
ACTIVITIES RELATED TO ENVIRONMENTAL AND WORKER HEALTH IMPACTS**

JULY 23, 2010

1. **Please provide the coordinates for all ships used for sampling that have been funded by BP as a part of the cleanup effort, including all independent contractors and recruited locals, since April 20, 2010. Please provide all data collected by these ships, including but not limited to rotifer toxicity, dead or stranded wildlife, methodology and associated data for monitoring or calculating the total volume of oil leaked and oxygen concentration/sampling.**

BP appreciates the importance of providing reliable and timely information regarding water quality and chemistry gathered in connection with the incident. Much of the data referred to in the request is already available on the BP website.<sup>1</sup>

Additional data from the Unified Command's water column sampling program (conducted by the Environmental Protection Agency (EPA), the National Oceanic and Atmospheric Administration (NOAA) and BP scientists on the *R/V Brooks McCall*, the *R/V Ocean Veritas* and now the *R/V Ryan Chouest*) has recently been assembled, including data from NOAA and the EPA, and this data is now posted on the BP website consistent with the EPA monitoring directive and efforts to bring greater transparency to the monitoring process.<sup>2</sup> This information and the analytical data and sampling plans from the other types of water, air, and sediment monitoring conducted by BP or its contractors is available from the "Monitoring and Sampling Information" page of the BP website.<sup>3</sup> New or additional monitoring data from the continuing sampling programs will similarly be released as they become available for posting. Please note that these results do not include data from samples collected by government agencies or other researchers not directed by the company. With regard to your request for ship locations, sampling location information is included with analytical results where applicable.

Finally, although BP is not currently collecting data on dead or stranded wildlife, the Unified Command has a program for reporting and collecting information at its website.<sup>4</sup>

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<sup>1</sup> See <http://www.bp.com/sectiongenericarticle.do?categoryId=9033821&contentId=7062498>.

<sup>2</sup> See <http://www.bp.com/genericarticle.do?categoryId=9033821&contentId=7062604>.

<sup>3</sup> See <http://www.bp.com/sectiongenericarticle.do?categoryId=9033821&contentId=7062498>.

<sup>4</sup> See <http://www.deepwaterhorizonresponse.com/go/doctype/2931/55963>.

2. **Has BP sampled air and water to monitor for the presence of ingredients of the dispersants Corexit 9500 and 9527? If yes, what are the results of this sampling? If not, why not? Please provide all data relating to the air and monitoring data, including the date the sample was taken, coordinates of sampling location, sampling equipment used and the limit of detection.**

The EPA and BP are involved in monitoring the air and water around worksites and along the shoreline for dispersant components. BP is working with the EPA to test air and water samples and track any potential effects of dispersants, and to ensure that protective measures are adequate. To the best of our knowledge, the samples taken so far have shown very low to non-detectable levels of dispersant ingredients. Monitoring data is posted at

<http://www.bp.com/genericarticle.do?categoryId=9033821&contentId=7062604> and  
<http://www.epa.gov/bpspill/dispersants.html#bpdata>.

BP in coordination with the Unified Area Command (UAC) is working closely with the Occupational Safety and Health Administration (OSHA) and the National Institute for Occupational Safety and Health (NIOSH) in conducting industrial hygiene monitoring of the response workers. These monitoring results have shown that worker exposure levels to dispersant ingredients are usually below the detection level and when detected, significantly below occupational exposure limits. We have provided below a link to BP's detailed industrial hygiene monitoring data and summaries of that data presented in a chart format.

<http://www.bp.com/genericarticle.do?categoryId=9033821&contentId=7062609>.

In particular, the following monitoring studies have been performed:

Monitoring studies to test for the presence of 2-butoxy-1-ethanol, a component of Corexit EC9527A but not EC9500:

- Monitoring by BP in select industrial hygiene samples. Results are posted on the BP web site at <http://www.bp.com/genericarticle.do?categoryId=9033821&contentId=7062609>.
- Monitoring by BP in coastal and near shore water and sediment. Results and sampling locations are posted on the BP web site at <http://www.bp.com/genericarticle.do?categoryId=9033821&contentId=7062586>.
- Monitoring by the OSHA of worker air samples. Results and work activities are posted on the OSHA web site at [http://www.osha.gov/oilspills/index\\_sampling.html](http://www.osha.gov/oilspills/index_sampling.html).
- Monitoring by the EPA of shoreline air using mobile analytical methods. Results are posted on the EPA web site at <http://www.epa.gov/bpspill/taga.html>.
- Monitoring by the EPA in shoreline water. Results are posted on the EPA web site at <http://www.epa.gov/bpspill/water.html#cumulative>.

Monitoring studies to test for the presence of 1,2-propanediol (propylene glycol), a component of both Corexit EC9527A and EC9500:

- Monitoring by BP in coastal and near shore water and sediment. Results and sampling locations are posted on the BP web site at <http://www.bp.com/genericarticle.do?categoryId=9033821&contentId=7062586>.
- Monitoring by OSHA of worker air samples. Results and work activities are posted on the OSHA web site at [http://www.osha.gov/oilspills/index\\_sampling.html](http://www.osha.gov/oilspills/index_sampling.html).
- Monitoring by the EPA in shoreline water. Results are posted on the EPA web site at <http://www.epa.gov/bpspill/water.html#cumulative>.

Monitoring studies to test for the presence of 2-sulfo-butanedioic acid, 1,4-bis(2-ethylhexyl) ester (dioctyl sulfosuccinate), a component of both Corexit EC9527A and EC9500:

- Monitoring by the EPA in shoreline water. Results are posted on the EPA web site at <http://www.epa.gov/bpspill/water.html#cumulative>.

Monitoring studies have been performed to test for the presence of 1-(2-butoxy-1-methylethoxy)-2-propanol (dipropylene glycol monobutyl ether), a component of Corexit EC9500A:

- Monitoring by the EPA of shoreline air using mobile analytical methods. Results are posted on the EPA web site at <http://www.epa.gov/bpspill/taga.html>.

3. **It is my understanding that 30,000 gallons of drilling mud was used in the failed “top kill” procedure and much of that found its way out of the pipes and into the ocean. It is my understanding, for example, that in addition to the synthetic oils and other chemicals that are used to make drilling mud, that BP may have included as much as 30% ethylene glycol, which is a common antifreeze, to ensure that methane hydrates didn’t form during the procedure. Ethylene glycol is also toxic. To understand the potential effect the drilling mud may be having on the marine ecosystem, please list all ingredients that made up the drilling mud used in the failed “top kill” procedure.**

The U.S. Coast Guard and the Minerals Management Service approved the top kill procedure, including the ingredients for the drilling mud. The ingredients used in the procedure were: fresh water (which, as used, contained a sodium chloride brine solution), caustic soda, DUOVIS (which consists of xantham gum and Glyoxal), ethylene glycol, and MI BAR (which consists of Barite and Crystalline Silica Quartz). The ethylene glycol used was a 30% solution, meaning that it was diluted with water at 30% concentration. That solution is what was added to the mud. BP used approximately 30,000 barrels of drilling mud in the top kill procedure.

4. **How much methanol has BP pumped into the ocean as a part of the mitigation efforts? Is BP continuing to use methanol to prevent the formation of hydrates? If**



**so, how much methanol is currently being used and how is that figure determined? If not, when did BP start and stop discharging methanol into the ocean? Please provide all measurements and data that pertain to methanol used in the mitigation effort.**

As of July 1, 2010, BP had pumped approximately 11,330 gallons of methanol in direct connection to the operations at the wellhead. BP is continuing to use methanol to mitigate hydrate formation at a rate of about 2-8 gallons/minute, depending on the mitigation operation. While the test facility is in recovery mode, the methanol is returned to the surface along with the captured oil and gas. At this time, both the oil and methanol are stored on the Enterprise.

The spreadsheet being produced at BP-HZN-CEC0079795 through BP-HZN-CEC0079798 tracks the amount of methanol being pumped as part of the mitigation effort. As for total methanol used during the mitigation effort, which includes pumped amounts and amounts used in other service, BP has used more than 168,000 gallons since the start of the mitigation effort.

5. **What are the methane concentration measurements for the area surrounding the leak site? Please provide the date of measurement, sampling equipment used, coordinates for sample location, and limit of detection of the equipment.**

BP monitors the air quality on the vessels that operate at the leak site in order to protect worker health and to help prevent potential fire hazards associated with exposure to methane and other crude oil constituents. The monitoring is conducted pursuant to the Offshore Air Monitoring Strategy.

Fire and explosion hazards and controls are assessed using handheld or stationary direct reading instruments with catalytic bead sensors for 0-100% Lower Explosive Limit (LEL). LEL sensors are not substance-specific. These sensors measure methane and other combustible gases present in the environment. The limit of detection or resolution for the LEL sensor is 1.0%. Monitoring data for vessels located at the leak site is available beginning on April 27, 2010. As of June 28, 2010, the average LEL concentration is 0.1% over an average of 16,239 measurements collected.

6. **Has BP been collecting monitoring data in accordance with OSHA standard 1910.120(h)(1)(i) regarding employee exposure to hazardous concentrations of hazardous substances? Please describe the methodology used to collect this data. What actions has BP taken in response to air quality measurements that exceeded the levels of concern or NIOSH recommended exposure limits?**

Monitoring for environmental and public health impacts is a joint effort among BP and several governmental agencies (*i.e.*, OSHA, the EPA, the Centers for Disease Control (CDC), NIOSH, and State Health Organizations (SHOs)). Results are posted on BP's website for daily air monitoring and sampling, water sampling, and health monitoring, and the Unified Area Command updates results on the Deepwater Horizon Response

website for air quality monitoring and water and sediment testing. The EPA also monitors and posts on its website air quality and water monitoring results.

In response to your question about air quality monitoring in particular, BP conducts air monitoring in accordance with air monitoring plans that have been approved by the Unified Area Command and are in compliance with 29 C.F.R. § 1910.120(h)(1)(i). They are designed to ensure selection of proper engineering controls, work practices, and personal protective equipment so that workers are not exposed to hazardous-substance levels in excess of the Permissible Exposure Limits (PEL) set by OSHA, the Threshold Limit Values (TLV) set by the American Conference of Governmental Industrial Hygienists (ACGIH), and/or the Recommended Exposure Limits (RELs) set by NIOSH.

To ensure that safety measures, designed to protect the workforce, remain effective, BP as part of its industrial hygiene program has engaged approximately 100 industrial hygienists and technicians to monitor area and personal exposures at the offshore, near-shore, and beach work areas. The air monitoring strategy includes both the use of real-time measurements and personal samples to demonstrate that safety systems including respiratory protection usage remain effective.

In particular, the technicians are using direct-reading instruments to conduct real-time monitoring for lower explosive limits for chemicals, and they monitor for exceedances of safe occupational exposure thresholds for benzene, hydrogen sulfide, carbon monoxide, oxygen, and other volatile organic compounds. The technicians in the offshore source-control area also monitor for sulfur dioxide and particulate matter. This real-time monitoring allows personnel to respond quickly to prevent over-exposure, provide necessary respiratory protection, or take any additional precautions.

Site action levels are set for the airborne hazards referred to above, and when an air-monitoring technician confirms a consistent reading above these action levels, they immediately inform the appropriate personnel—the vessel captain, in the case of offshore operations, or the site officials, in the case of onshore or near-shore operations. Work is then restricted in that area to workers wearing appropriate respiratory protection or else they must leave the area of exposure. It should be noted that in the case of vessel workers working offshore, they must first undergo the vessel's respiratory protection program that includes training, medical certification, and appropriate fit-testing for the respirator(s) that may be utilized for specific activities.

In addition to the real-time monitoring described above, Organic Vapor Monitor (OVM) badges are used to assess any personnel exposures to benzene, ethyl benzene, toluene, xylene and total hydrocarbons. In offshore operations, OVM badges are placed on personnel identified as having the highest potential for exposure, and monitoring is conducted on workers who spend the most time on the deck each day. For onshore and near-shore operations, the objective is to sample 10% of the representative population. The number of samples taken is based on an analysis of similar exposure groups, which consist of workers having the same general exposure profile based on, for example, the similarities of the tasks they perform and the materials with which they work.

OVM badges are analyzed pursuant to OSHA-approved methodologies by a laboratory accredited by the American Industrial Hygiene Association. The laboratory results are reviewed by a certified industrial hygienist who investigates any exposures above OSHA PELs, ACGIH TLVs, or NIOSH RELs to determine whether the proper workplace controls were in place or whether they need to be modified.

To date, more than 9,000 personal samples have been taken of workers involved in source control activities, offshore and near-shore operations, beach cleanup, and other response activities. In the vast majority of cases, there have been no significant exposures to airborne concentrations of benzene, total hydrocarbons or dispersant chemicals of interest. In the small number of cases where exposure data was slightly above the applicable limit, the issue was investigated and has usually been attributable to an unusual, nonrecurring event (e.g., a marine vessel fuel or hydraulic leak).

As sample results are validated, personal exposure data are shared with OSHA, NIOSH, the CDC and the EPA. Sample results are also published on the BP website at <http://www.bp.com/genericarticle.do?categoryId=9033821&contentId=7062609>.

7. **There have been numerous reports of illness experienced by those responding to the BP spill, and given both the short-term and potential long-term health effects of exposure to oil, gas and dispersants, it may be important to monitor the health of these individuals well into the future. What procedures are you taking to maintain records of all BP workers, contractors and recruited local residents that are assisting in the cleanup of the oil spill? Do you maintain records of their contact information, dates that each individual worked, and how many hours were logged? Do you also maintain records of what type of cleanup activities each individual partook in and the type of personal protective equipment they were given (i.e. respirators, gloves, hazmat suits)?**

BP takes very seriously the health and safety of every individual involved in the response effort. BP provides identity badges for most of the workers assisting in the cleanup, and the computer system for the badges tracks contact information of the workers. The workers without badges include those who are assisting with the skimming efforts and BP's Vessels of Opportunity program, since badges are a means of security and those particular workers generally do not enter the Incident Command Post sites or staging areas.

All workers assisting in the effort, including those without identity badges, must undergo training, which covers, among other things, any hazards associated with their assignments. To complete the training, individuals must provide their contact information, which is kept in a database maintained by a BP contractor. In addition, individuals assisting in the response effort have the opportunity to provide contact and other personal information to NIOSH as part of its rostering study. BP and the Unified Area Command support the rostering study and the goal of identifying all workers, including volunteers, involved in all response and cleanup activities. The NIOSH

rostering effort should be useful for short-term and long-term response worker health studies.

Given the massive number of volunteers and contractors, BP does not currently maintain records specifying for each individual worker the actual number of hours worked, the specific tasks conducted, and the type of personal protective equipment used. However, BP is cooperating with NIOSH in that agency's rostering program, described above, which will provide that information for the workers who agree to participate in the program. It is our understanding that worker participation in the NIOSH rostering has been very good.

Methanol Re-Cap Thursday Jul 01 2010

|                                |                      |   |
|--------------------------------|----------------------|---|
| Input Start Date & Time:       | 04:00 hrs Thu Jul 01 | Enterprise Meth Line "G"  |
| Input Methanol Injection Rate: | 2.0 gpm              | (Injection rate varies: 8 gpm max rate; Currently 2 gpm / 1500 gal) |
| Input Start Date & Time:       | 04:00 hrs Thu Jul 01 | HP 1 Meth Line "A"  |
| Input Methanol Injection Rate: | 0.0 gpm              | (Injection rate varies: 5 gpm max rate; Currently 0 gpm / 0 gal)    |

| Full Tanks | Usable Gals | Methanol GPM | Pump Hours | Run Out Time         | Comments                    |
|------------|-------------|--------------|------------|----------------------|-----------------------------|
| 3.0        | 8,000       | 2.0 gpm      | 66.7       | 22:40 hrs Sat Jul 03 | Currently on Enterprise     |
| 9          | 14,400      | 2.0 gpm      | 120.0      | 22:40 hrs Thu Jul 08 | On Location aboard Workboat |

| Location              | Full | Empty | Usable Gals  | Comments                               |
|-----------------------|------|-------|--|--|
| Enterprise            | 5.0  | 7     | 8000   | On Enterprise                          |
| At Rig - Silver Arrow | 9    | 0     | 14400  | Silver Arrow - On Location             |
| At Dock               | 16   |       | 28800  |  |
| On Workboat           | 0    | 0     |  | Waiting on Weather (Friday 7)          |
| Out of Service        | 0    | 3     | 0  | Three tanks sent back - out of service |
| Total Tanks:          | 30.0 | 10    | = 40 Total Tanks in Rotation (all 2,000 gal tanks) |  |

\*\*2000 gal tanks are filled to 1800 gals\*\*

rate  
gpm  
13

usage  
day  
18,720

10 tanks  
available  
16,000

lost  
every  
0.3 days

-10.3

[illegible]

| Methanol Injection Rates Meth A Hotstabs |       |         |          |
|--|-------|---------|----------|
| Umbilical Lines 13.15                    |       |         |          |
| GPM                                      | Hertz | VFL PSI | Reel PSI |
| 4  | 22.0  | 7,000   | 6,400    |
| 5  | 30.4  | 10,000  | 9,000    |

| Methanol Injection Rates Meth B Hotstabs |       |         |          |
|--|-------|---------|----------|
| Umbilical Lines 12.3.5                   |       |         |          |
| GPM                                      | Hertz | VFL PSI | Reel PSI |
| 4  | 21.3  | 2,900   |          |
| 5  | 26.5  | 4,200   |          |
| 6  | 32.5  | 5,800   |          |
| 7  | 38.9  | 7,000   |          |
| 8  | 45.7  | 9,200   |          |

| Methanol Injection Rates Meth A & B Hotstabs |       |         |          |
|--|-------|---------|----------|
| Umbilical Lines 12.3.5, 13.15                |       |         |          |
| GPM  | Hertz | VFL PSI | Reel PSI |
| 4  | 22.0  | 2,000   | 1,100    |
| 5  | 26.2  | 2,700   | 1,600    |
| 6  | 31.5  | 3,700   | 2,100    |
| 7  | 37.5  | 4,800   | 2,800    |
| 8  | 43.3  | 6,000   | 3,500    |

BP-HI, -CEC079798



HENRY A. WAXMAN, CALIFORNIA  
CHAIRMAN

JOE BARTON, TEXAS  
RANKING MEMBER

ONE HUNDRED ELEVENTH CONGRESS  
**Congress of the United States**  
**House of Representatives**  
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Minority (202) 225-3841

June 18, 2010

Mr. Tony Hayward  
Chief Executive Officer  
BP PLC  
1 St. James's Square  
London SW1 Y 4PD  
United Kingdom

Dear Mr. Hayward:

I write to request additional information regarding BP's assertions that there are no sub-surface plumes of oil spewing into the ocean from the Deepwater Horizon leak. BP's June 7<sup>th</sup> response to my letter of May 31<sup>st</sup>, as well as your responses to my questions on this topic at yesterday's Oversight and Investigations Subcommittee hearing, were inadequate, and, along with numerous public statements by BP officials, raise additional questions.

As you know, on June 8, NOAA Administrator Jane Lubchenco confirmed the findings of several scientists that identified large volumes of oil under the surface of water, saying "We have always known that there is oil under the surface."<sup>1</sup> She went on to confirm the presence of several sub-surface clouds or plumes of oil that were traceable to the Deepwater Horizon leak.

Many experts have raised concerns about these plumes' potential to cause significant harm to aquatic life in the Gulf of Mexico. This can occur via two mechanisms. First, the toxic constituents of oil and dispersants can poison the aquatic plants and animals that are exposed to them, leading to death, non-lethal harm to species or contamination of the marine food chain. Second, as naturally-occurring bacteria consume the oil dispersed in the plumes and multiply, they also use up oxygen, and this can in turn lead to localized depletions in oxygen levels that could cause marine life to die of asphyxiation. Oxygen depleted at the depths that these plumes have been found can take years to replenish, causing long-term damage to the deep Gulf ecosystem.

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<sup>1</sup> Transcript, Unified Command Press Briefing, June 8, 2010

I wrote to BP on May 31 because you stated on May 30 that BP's samples showed "no evidence" that oil was suspended sub-surface in this manner, going on to state that "The oil is on the surface. Oil has a specific gravity that's about half that of water. It wants to get to the surface because of the difference in specific gravity."

In its June 7 response, and despite NOAA's findings to the contrary, BP continues to assert that "there is no coherent body of hydrocarbons below the surface." Additionally, on June 9 2010, BP COO Doug Suttles stated on the Today Show that "We haven't found any large concentrations of oil under the sea. To my knowledge, no one has."

BP's measurements provided to me as the purported basis for these assertions seem limited at best. They do not address the findings of subsurface plumes made by other independent scientists and verified by NOAA, and appear to be missing evidence of subsurface plumes that EPA maintains was derived from BP's own measurements. Additionally, your responses to my questions at yesterday's hearing were equivocal – you did not clearly confirm BP's view that sub-surface plumes do exist.

In short, it appears as though once again, BP is making questionable assertions using flawed and incomplete data in order to minimize the potential harm its leak has caused and may cause going forward. Please respond to the following questions:

1. BP provided summary materials for 4 research cruises spanning the time period May 15<sup>th</sup> to June 1<sup>st</sup>. The R/V Brooks McCall conducted 3 of those cruises and the R/V Ocean Veritas conducted one. With the exception of 3 stations on the R/V Ocean Veritas cruise, all of the sample locations for these cruises were west of the wellhead. The university cruises that initially identified subsurface oil concentrations found them to the east of the wellhead. Did BP conduct additional sample collections east of the wellhead, in order to verify the findings made by these independent scientists? If not, why not, and on what basis did you and Mr. Suttles then dismiss their findings (on May 30 and June 9, respectively)?
2. As you know, NOAA recently launched a new website<sup>2</sup> to enable scientists and other members of the public to track the spill response in real-time. One feature this website enables is a way to determine where the subsurface monitoring ships are sampling. Is BP providing all information necessary to enable tracking of BP's vessels using this website? For example, are BP's ships equipped with operating location identification technologies at all times? If so, please describe all such technologies. If not, why not?
3. In your responses to my questions at yesterday's hearing, you agreed to provide all your data and measurements. I appreciate your willingness to do so. Please provide the coordinates for all ships used for sampling that have been funded by BP as a part of the cleanup effort, including all independent contractors and recruited locals, since April 20, 2010. Please provide all data collected by these

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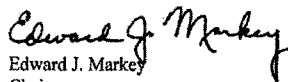
<sup>2</sup> <http://gomex.erna.noaa.gov/erna.html#x=-90.42000&y=28.03000&z=6&layers=3023+497+3852>

ships, including but not limited to fluorometry, air sampling measurements, conductivity, temperature and depth measurements, dissolved oxygen, total petroleum hydrocarbons concentrations, polyaromatic hydrocarbon concentrations, oil particle size, methane concentrations, and colored dissolved organic matter measurements.

4. BP also provided in your response the May 30<sup>th</sup> Interim Summary Report of the R/V Brooks McCall. The first bullet of the summary says: "There are very low concentrations of hydrocarbons, measured in the range of not detectable, effectively 0, to a maximum known spike of 72 parts per billion in the water column below the visible oil slick on the surface. This means there is no coherent body of hydrocarbons beneath the surface." Taken as written, this suggests that samples were only taken in areas where oil was visible on the ocean surface. Were samples taken at locations without visible oil slicks? If not, why not, since many of the reports of sub-surface plumes were found elsewhere?
5. In my May 31 letter, I asked that you provide me with your sampling methodology. Instead, you provided EPA's directive to BP for developing a sampling plan. Please provide the sampling plans developed in response to EPA's directive.
6. EPA's website contains a May 30, 2010 map of subsurface plumes that have been identified, reportedly using BP data.<sup>3</sup> As you can see from the map, it indicates that BP's data from the R/V Brooks McCall identified 17 subsurface plumes in various locations surrounding the wellhead. Why did you fail to note this data in your June 7, 2010 response? Please provide all data submitted to EPA and used to construct this map.

Thank you very much for your attention to this important matter. Please provide your response no later than Friday June 25, 2010. If you have any questions or concerns, please have your staff contact Dr. Michal Freedhoff of the Energy and Environment Subcommittee staff at 202-225-2836.

Sincerely,



Edward J. Markey  
Chairman  
Energy and Environment Subcommittee

cc: Honorable Henry Waxman, Chairman  
Honorable Joe Barton, Ranking Member  
Honorable Fred Upton, Ranking Member

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<sup>3</sup> <http://www.epa.gov/bpspill/dispersants/bp-map-may30.jpg>

WILMERHALE

July 2, 2010

David S. Molot

The Honorable Edward J. Markey, Chairman  
 Subcommittee on Energy and Environment  
 Committee on Energy and Commerce  
 United States House of Representatives  
 2125 Rayburn House Office Building  
 Washington, DC 20515-6115

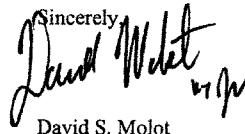
+1 202 663 6843(t)  
 +1 202 663 6363(f)  
 david.molot@wilmerhale.com

Re: Further Response to Chairman Markey's Correspondence Dated June 18, 2010, to Dr.  
 Tony Hayward, Chief Executive Officer of BP plc

Dear Chairman Markey:

I am writing on behalf of BP America, Inc. ("BPA") in follow-up to our June 25 letter to you concerning assessments of potential sub-surface concentrations of oil in connection with the *Deepwater Horizon* oil rig incident in the Gulf of Mexico. This is to confirm that the available sampling analytical data and sampling plan documents from the Unified Command's water column sampling program referred to in BPA's response to your Questions Nos. 3 and 5 have now been posted on the BP website.<sup>1</sup> This information and the analytical data and sampling plans from the other types of water, air, and sediment monitoring conducted by BPA or its contractors is available from the "Monitoring and Sampling Information" page of the BP website.<sup>2</sup> New or additional monitoring data from the continuing sampling programs will similarly be released as they become available for posting. Please note that these results do not include data from samples collected by governmental agencies or other researchers not directed by the company. In addition, the data being posted do not include continuous research ship coordinates, although sampling location information is included with analytical results where applicable.

If you have any questions, or require additional information, please feel free to contact me or to have your staff contact Liz Reicherts at (202) 457-6585.

Sincerely,  
  
 David S. Molot

cc: Hon. Henry Waxman, Chairman  
 Hon. Joe Barton, Ranking Member  
 Hon. Fred Upton, Ranking Member

<sup>1</sup> <http://www.bp.com/genericarticle.do?categoryId=9033821&contentId=7062604>

<sup>2</sup> <http://www.bp.com/sectiongenericarticle.do?categoryId=9033821&contentId=7062498>

HENRY A. WAXMAN, CALIFORNIA  
CHAIRMAN

JOE BARTON, TEXAS  
RANKING MEMBER

ONE HUNDRED ELEVENTH CONGRESS  
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**House of Representatives**  
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June 23, 2010

Mr. Tony Hayward  
Chief Executive Officer  
BP PLC  
1 St. James's Square  
London SW1 Y 4PD  
United Kingdom

Dear Mr. Hayward:

I write to request information related to the integrity of the wellbore and casing at the Deepwater Horizon leak site, as well as to request further information on the design, testing, timeframe and likelihood of success for the relief wells being drilled today. While BP has repeatedly stated that the relief well would be completed by mid-August<sup>1</sup>, I am concerned that possible damage to the wellbore and casing and the difficulty of the operation itself could result in more weeks or months before the flow of oil and gas is finally stopped.

As you know, there has been speculation that the wellbore and casing at the Deepwater Horizon leak site may have been damaged and that leaks of oil and gas may already be coming through the sea floor or through the pipe itself. The risks of this occurring were increased by BP's decision to use a more risky drill pipe casing design, and because the riser pipe was both inadequately centered in the well-bore and inadequately cemented.<sup>2</sup> Damage to these already vulnerable systems could have occurred through a number of events: via the initial explosions that sunk the rig, through erosion from the high pressures and volumes of oil and gas associated with the leak and possible washout from the formation, or due to the failed "Top Kill" efforts which blasted 30,000 barrels of drilling mud under high pressure into the well.

<sup>1</sup> For example, statements made by BP's Lamar McKay at the June 15, 2010 hearing of the Energy and Environment Subcommittee and those made by BP's Tony Hayward at the June 17, 2010 hearing of the Oversight and Investigations Subcommittee.

<sup>2</sup> See [http://energycommerce.house.gov/documents/20100614/Hayward\\_BP\\_2010.6.14.pdf](http://energycommerce.house.gov/documents/20100614/Hayward_BP_2010.6.14.pdf) for an excellent summary of these issues

In fact, in his June 17 press briefing, Admiral Thad Allen stated that “I think that one thing that nobody knows is the condition of the wellbore from below the blow out preventer down to the actual oil field itself. And we don’t know, we don’t know if the wellbore has been compromised or not. One of the reasons we did not continue with top kill at higher pressures, there was a concern that if we increased the pressure too hard it might do damage to the casings and the wellbore. What we didn’t want was open communication of any oil from the reservoir outside the wellbore that might get into the formation and work its way to the sub sea floor and then result in uncontrolled discharge at that point.”

In a June 18, 2010 article in the *Times Picayune*,<sup>3</sup> Bob Bea of the University of California at Berkeley indicated that there is reason to believe that oil and gas is leaking from places other than the containment cap. BP officials said that a disk that is part of the subsea safety infrastructure may have failed in the initial April 20<sup>th</sup> explosion, which may have contributed to the failure of the “top-kill”<sup>4</sup>. As reported by the *Wall Street Journal*, people familiar with BP’s “top-kill” attempt have speculated that some drilling mud may have escaped the well into the surrounding rock.

In addition to concerns related to the condition of the wellbore, I am also concerned that the relief well design, testing and likelihood of success may prove the August timeframe to be optimistic. At the June 15, 2010 hearing of the Energy and Environment Subcommittee, BP’s Lamar McKay stated in response to questions that “the design of the relief well is very, very similar to the original well.” In light of the well-documented and extensive problems associated with the original well’s design, this statement is worrisome to contemplate. Moreover, it can take more than one attempt to plug a well using a relief well. For example, it took nearly 10 months to permanently halt the Ixtoc oil spill.

In the June 17, 2010 hearing of the Oversight and Investigations Subcommittee, you testified that you believed the reservoir contained 50 million barrels of oil. The damage that such a quantity of oil could do, should it all leak into the Gulf of Mexico, would be staggering. It is imperative that the efforts to permanently halt the flow of oil are successful. Consequently, I ask for your prompt responses to the following questions:

**Questions on relief well design and timeframe**

- 1) Please provide documents related to the design of the current relief wells.
  - a. Please include all documents related to the type of liner being used for the relief wells. Will it be a full-string system such as that used at the Macondo well, a system that includes a liner with a tie-back which provides more barriers to block any flow of oil and gas, or some other design?
  - b. Please include all documents related to the cement jobs being performed on the relief wells. Have and will cement bond logs be used after each

<sup>3</sup> [http://blog.nola.com/2010\\_gulf\\_oil\\_spill/print.html?entry=/2010/06/oil\\_spill\\_containment\\_efforts.html](http://blog.nola.com/2010_gulf_oil_spill/print.html?entry=/2010/06/oil_spill_containment_efforts.html)

<sup>4</sup> “BP Cites Broken Disk in Top Kill Failure,” *Wall Street Journal*, June 2, 2010

cement job or remedial cement job in order to ensure the integrity of the cement job?

- c. Please include all documents related to the blowout preventers being used for the relief wells. Are the as-built engineering documents up-to-date and available to operators on the drilling rigs?
  - d. Have these blowout preventers been tested prior to deployment to ensure that the sort of problems reported to have occurred on the blowout preventer used on the Macondo well (related to battery power for the dead-man switch, potential failure of the control system to be connected to the shear ram, hydraulic fluid pressure leaks and other problems) do not exist?
  - e. How many blind shear rams will the blowout preventers used for the relief well have? Who manufactured the blowout preventers that will be used? Have system integration tests been performed on them?
  - f. What sorts of imaging or other monitoring technologies will be built into the blowout preventers used on the relief wells? Will these technologies be left in place in order to monitor for leaks once the Macondo well is sealed?
  - g. Please include all documents related to planned or ongoing testing of the relief wells that will occur prior to the first attempt to plug the Macondo well.
- 2) Please provide documents related to the timeframes for relief well drilling, testing and use.
- a. Please include all documents related to the expected schedule for the completion of the drilling, casing and cementing of each relief well.
  - b. Please include all documents related to the schedule for the testing of each relief well prior to the start of the "kill" operation.
  - c. Please include all documents related to the anticipated schedule and timeframe for killing the well. How long could each step, including filling the relief well with drilling mud, take if all goes according to plan? How long might it take from the beginning of the "kill" operation until the Macondo well is plugged?
  - d. What is the likelihood that filling the relief wells with drilling mud will result in fractures and a subsequent loss of pressure? Please provide all relevant documents.
  - e. In the event that the first attempt to locate the Macondo well fails, how long will it take in order to prepare a second or subsequent attempt(s)? How long will the second or subsequent attempt(s) take? Please provide a time estimate for each step needed to prepare for a second or subsequent attempt.
  - f. Are there any known magnetic anomalies in the area or geological formations that might give rise to such anomalies in the area that will make detection of the Macondo well pipe more difficult? If so, please provide all relevant documents.

**Questions on the condition of the wellbore and reports of sea floor leaks**

- 3) Please provide documents related to the condition of the wellbore.
  - a. Has BP attempted to determine whether the casing inside the wellbore has been damaged and if so, what were the results? Please provide all measurements, images, and other documents related to the condition of the wellbore, as well as any future plans for such measurements going forward.
  - b. Has BP confirmed or attempted to confirm the presence of hydrocarbons leaking from anywhere other than the containment cap? If so, what were the results? Please provide all related documents.
  - c. Has BP surveyed the vicinity of the well to look for any leaks from the sea floor? If so, what area was surveyed? Please provide all measurements, images, and other documents related to any survey(s) to identify hydrocarbon leakage from the sea floor. If no survey has been performed, why not?
- 4) Please provide documents related to stopping a worst-case scenario blowout:
  - a. If hydrocarbons are leaking directly into the ocean from the wellbore or the sea floor, will this complicate, delay or otherwise impede BP's efforts to plug the flow using the relief wells? If so, how? If not, why not?
  - b. If BP discovers, during the relief well "kill" efforts, that hydrocarbons are also leaking from a location significantly above the target reservoir, what options exist to contain such leakage? Please provide all relevant documentation.
  - c. Please provide all documents related to the geologic formation in which the Macondo well is located. Are there significant deposits of oil and gas in formations above the target reservoir? Please provide an estimate of the total amount of oil and gas that is contained in i) the Macondo well target formation and ii) each formation above the target formation that could leak hydrocarbons into the annulus as a result of poor cementing, damage caused by the initial explosion(s), or the failed Top Kill effort.

**Questions on other potential hydrocarbon reservoirs in the well**

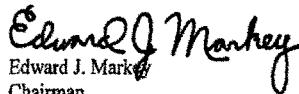
- 5) Please provide documents related to the possibility that the initial drilling encountered leakage from other formations above the target reservoir.
  - a. In order to understand the geological complexity of the well, please provide all geological logs, including the mud log, and all geophysical logs, including resistivity and porosity logs.
  - b. A May 23, 2010 article entitled "Documents show BP chose a less-expensive, less-reliable method for completing well in Gulf oil spill" in the Orlando Sentinel stated that well records indicate that in late February, there was a loss in drilling mud pressure. According to the article, this could mean that the mud fractured layers of sand or shale in the formation and vanished. The article goes on to state that in early March, the pressure of the oil and gas encountered overwhelmed the pressure of the drilling



mud. In mid-April, a loss of drilling mud was reportedly again experienced. Do any or all of these events indicate that oil and gas could be flowing from somewhere other than the target reservoir? If so, please explain fully, and if not, why not?

Thank you very much for your attention to this important matter. Please provide your response no later than Friday July 2, 2010. If you have any questions or concerns, please have your staff contact Dr. Michal Freedhoff of the Energy and Environment Subcommittee staff at 202-225-2836.

Sincerely,

  
Edward J. Markey

Chairman  
Energy and Environment Subcommittee

cc: Honorable Henry Waxman, Chairman  
Honorable Joe Barton, Ranking Member  
Honorable Fred Upton, Ranking Member

WILMERHALE

July 2, 2010

David S. Molot

The Honorable Edward J. Markey  
 Chairman  
 Subcommittee on Energy and Environment  
 Committee on Energy and Commerce  
 U.S. House of Representatives  
 2125 Rayburn House Office Building  
 Washington, DC 20515-6115

+1 202 663 6843 (H)  
 +1 202 663 6363 (F)  
 david.molot@wilmerhale.com

**Re: Response to Chairman Markey's Correspondence, dated June 23, 2010, to Dr. Tony Hayward, CEO of BP p.l.c., and June 24, 2010, to Mr. Lamar McKay, President and CEO of BP America Inc.**

Dear Chairman Markey:

I am writing on behalf of BP America Inc. ("BPA") in response to your letter dated June 23, 2010 to Dr. Tony Hayward, Chief Executive Officer of BP p.l.c., as well as your correspondence dated June 24, 2010 to Mr. Lamar McKay, Chairman and President of BPA. Those two letters pose thirty-nine questions and seek production of documents regarding critical elements of the response to this incident, including (1) "the design, testing, timeframe, and likelihood of success for the relief wells" that are currently being drilled for the Mississippi Canyon 252 ("MC 252") well, and (2) the temporary removal of the Lower Marine Riser Package ("LMRP") cap for approximately ten hours on June 23.

BP appreciates your acknowledgment, as noted in your prior letters to BP, that you do not wish "to interfere with or delay any efforts to eliminate or limit the flow of oil." Because your June 23 and 24 letters are principally directed to ongoing, mission-critical operations in the Unified Command's efforts to respond to the incident, a full and complete response to those letters would require retrieval of information and documents directly from BP personnel who are actively involved in essential, around-the-clock response operations. BP appreciates your understanding that such an effort risks disruption of, or delay to, the response efforts.

As BPA has made clear through responses to you in previous letters that it has sent on May 15, May 24, May 26, June 7, June 9, June 13, June 14 and June 25, 2010, BPA is committed to cooperating with your inquiries. Accordingly, while BP is not able to provide a full response at this time, we are providing today some documents and information that are responsive to your request.

In response to your June 23 letter, BPA is producing with this letter the Company's Applications to Drill the two relief wells; these documents bear the Bates-labels BP-HZN-CEC029244 through BP-HZN-CEC029549. As you know, these applications were submitted to, and approved by, the Minerals Management Service (recently renamed the Bureau of Ocean Energy Management, Regulation, and Enforcement). The information provided in these

WILMERHALE

The Honorable Edward J. Markey  
July 2, 2010  
Page 2

documents is responsive to many of your questions about the design and construction of the two relief wells.

In response to your June 24 letter, BPA can also provide some background information about the events of June 23, 2010, when the LMRP cap was temporarily removed as a precaution following the observation of an unexpected discharge of seawater from a diverter valve on the *Discoverer Enterprise* drill ship. The diverter valve is a safety system intended to divert an unintended, uncontrolled release of hydrocarbons away from the drill ship. Under ordinary circumstances, the diverter valve should not have any water or hydrocarbons flowing through it; seawater flowing through the diverter could indicate an uncontrolled release of gas or other hydrocarbons. Therefore, as a safety precaution, and in compliance with the ship's operating and safety manuals, the ship—and the attached LMRP cap—were disconnected from the MC 252 well in order to investigate and remediate the cause of the seawater discharge.

Following an inspection of the riser valves by subsea remotely operated vehicles ("ROVs"), it was confirmed that one of the two valves on the riser that assist in circulating hot water around the drill pipe had been inadvertently closed. An ROV then opened the valve, allowing hot water to once again flow alongside the drill pipe and out the valve. Once the team confirmed that no hydrocarbons were reaching the surface, the LMRP cap was placed back on the MC 252 well and the cap continues to function as it had prior to its temporary removal. To date, BP has not determined what caused the valve to close, and it has not been able to locate video identifying the cause of the closure because the valves are not visible on contemporaneous video due to the presence of hydrocarbons coming up from the MC 252 well.

Please note that today's production contains confidential business information. BPA respectfully requests that these documents be maintained confidentially and that, if you are considering releasing or otherwise disclosing the content of any of these documents, BPA be given an opportunity in advance of disclosure to be heard on that question.

In the spirit of transparency and cooperation that has guided BP's efforts to date, BP remains committed to assisting you and your staff as you gather information. If you have any questions or concerns, please feel free to contact me or Liz Reicherts at 202-457-6585.

Sincerely,



David S. Molot

WILMERHALE

The Honorable Edward J. Markey  
July 2, 2010  
Page 3

cc: Chairman Henry Waxman  
Ranking Member Joe Barton  
Ranking Member Fred Upton

WILMERHALE

July 9, 2010

David S. Molot

The Honorable Edward J. Markey  
 Chairman  
 Subcommittee on Energy and Environment  
 Committee on Energy and Commerce  
 U.S. House of Representatives  
 2125 Rayburn House Office Building  
 Washington, DC 20515-6115

+1 202 663 6843(f)  
 +1 202 663 6363(f)  
 david.molot@wilmerhale.com

**Re: Supplemental Response to Chairman Markey's Correspondence, dated June 23, 2010, to Dr. Tony Hayward, CEO of BP p.l.c.**

Dear Chairman Markey:

I am writing on behalf of BP America Inc. ("BPA") to provide supplemental information in response to your letter dated June 23, 2010 to Dr. Tony Hayward, CEO of BP p.l.c. BPA responded to your request on July 2 by providing information and copies of the permits for the two relief wells. In a July 7 phone conversation with Kevin Bailey of BPA, Dr. Ana Unruh-Cohen requested: (1) additional information describing how the documents BPA produced on July 2 relate to the questions posed in your June 23 letter; and (2) additional information regarding Question 3 of your June 23 letter, including why it may be challenging for the Company to address that request during the ongoing, round-the-clock operation to drill the relief wells.

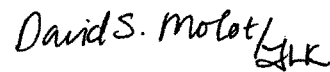
As part of BPA's commitment to provide information responsive to your requests in a timely manner, BPA is providing the attached chart in response to your first request. The attached chart lists the question numbers contained in your June 23 letter, and it provides a citation to each page in the drilling permits that contain relevant information. As BPA stated in its July 2 letter, the permits are responsive to many of your questions about the design and construction of the two relief wells. BPA is working to provide information in response to your second request and will do so as soon as possible.

WILMERHALE

The Honorable Edward J. Markey  
July 9, 2010  
Page 2

BPA takes your concerns very seriously and is committed to taking the necessary steps to ensure the relief wells are effective and safe. Please contact me or Kevin Bailey at 202-346-8519 if you have any questions.

Sincerely,

A handwritten signature in black ink that reads "David S. Molot" followed by a stylized monogram "GJK".

David S. Molot

Enclosure

cc: Chairman Henry Waxman  
Joe Barton, Ranking Member  
Fred Upton, Ranking Member

WILMERHALE

The Honorable Edward J. Markey  
 July 9, 2010  
 Page 3

## APPENDIX A:

**SUPPLEMENTAL RESPONSE TO CHAIRMAN MARKEY'S CORRESPONDENCE, DATED JUNE 23,  
 2010, TO DR. TONY HAYWARD, CEO OF BP P.L.C.**

| Question | Corresponding Bates Numbers   |
|----------|---|
| 1(a)     | BP-HZN-CEC029244, 247-50, 253-54, 256, 259, 263-64, 269, 271, 273, 275, 277, 279, 287, 290, 292-94, 361, 363-65, 368-70, 372-33, 375, 377, 379, 381, 383, 385, 389, 391, 417-18, 421, 423-25, 427-29, 432, 434-36, 438-40, 443, 445-47, 453-54, 457-60, 465, 469, 477, 484-87, 489, 492, 495-97 |
| 1(b)     | BP-HZN-CEC029247-50, 253-54, 256, 259, 290, 292-94, 361, 368-70, 372-33, 417-18, 421, 423-25, 427-28, 432, 434-36, 438-39, 443, 445-47, 453, 457-60, 463, 465-68, 470-77, 484-87, 492, 495-97   |
| 1(c)     | BP-HZN-CEC029247-50, 253-54, 266-67, 280-83, 290, 292-94, 296, 308, 312, 361-65, 368-70, 392-94, 395-99, 401, 402-13, 416, 421, 423-25, 428, 432, 434-36, 443, 445-47, 449-53, 457-60, 469, 488-89, 492-93, 495-97, 499-549   |
| 1(d)     | BP-HZN-CEC029266-67, 284-86, 290, 308, 312, 362, 368-70, 395-96, 397-98, 401, 405-06, 411-13, 421, 432, 443, 449-52, 488, 492, 495-97, 500-49   |
| 1(e)     | BP-HZN-CEC029280-81, 296, 308, 312, 361-62, 397-98, 407, 410, 412-13, 501-49  |
| 1(f)     | BP-HZN-CEC029308, 312, 362  |
| 1(g)     | BP-HZN-CEC029247-50, 253-54, 263, 266-67, 268, 270, 272, 274, 276, 278, 284-86, 290, 292-94, 361-65, 368-70, 374, 376, 378, 380, 382, 384, 391, 395-96, 402-07, 410, 412-13, 421, 423-25, 432, 434-36, 443, 445-47, 449-52, 458-60, 469, 477, 488, 492-93, 495-97, 501-49                       |
| 2(f)     | BP-HZN-CEC029245, 255, 257-58, 288, 290, 305, 362, 387-88, 419, 421, 430, 432, 441, 443, 455, 490   |
| 4(c)     | BP-HZN-CEC029245, 255, 257-58, 288, 290, 305, 359, 362, 371, 387-88, 419, 421, 430, 432, 441, 443, 455, 464, 490  |

HENRY A. WAXMAN, CALIFORNIA  
CHAIRMAN

JOE BARTON, TEXAS  
RANKING MEMBER

ONE HUNDRED ELEVENTH CONGRESS  
**Congress of the United States**  
**House of Representatives**  
COMMITTEE ON ENERGY AND COMMERCE  
2125 RAYBURN HOUSE OFFICE BUILDING  
WASHINGTON, DC 20515-6115

Majority (202) 225-2927  
Minority (202) 225-3641

June 24, 2010

Admiral Thad W. Allen  
Commandant  
United States Coast Guard  
2100 Second Street SW Stop 7101  
Washington, DC 20593-7101

Dear Admiral Allen,

I write to request information on the use of dispersants as a means to mitigate the effects of the oil that has been spewing into the Gulf of Mexico for 9 weeks. As slicks and plumes of oil and gas expand in the Gulf, the list of unknowns that surround the disaster's impact on the marine life and human health continue to grow.

One of BP's primary mitigation strategies involves the application of chemical dispersants to break the oil into tiny droplets that scatter in the ocean and may be more readily consumed by microbes. These chemicals are being sprayed onto the surface of the ocean, and for the first time in U.S. history are also being applied at the source of the leak, almost one mile below sea surface. Millions of gallons of chemical dispersant have been added to the Gulf waters, contributing to a toxic stew of chemicals, oil and gas with impacts that are not well understood.

There has been much speculation that the use of dispersants has contributed to the formation of large plumes or clouds of oil that are suspended well below the ocean surface. Many experts have raised concerns about these plumes' potential to cause significant harm to aquatic life in the Gulf of Mexico. This can occur via two mechanisms. First, the toxic constituents of oil and dispersants can poison the aquatic life exposed to them and may lead to death or non-lethal harm to species and contamination of the marine food chain. Second, as naturally-occurring bacteria consume the oil, they also use up oxygen that is critical to the survival of many marine organisms. This can in turn lead to localized depletions of oxygen levels that could cause marine life to die of asphyxiation. Oxygen depleted at the depths that these plumes have



been found can take years to replenish, causing long-term damage to the deep Gulf ecosystem. On June 23, 2010, NOAA scientists re-confirmed the existence of these plumes, and additionally confirmed that their characteristics are consistent with the use of chemically-dispersed oil.

In light of environmental concerns about dispersants, on May 20, 2010 EPA and the U.S. Coast Guard directed BP to identify and start using a dispersant that is of lower toxicity and higher efficacy than Corexit, the trademarked name for the most toxic and least effective of the EPA-approved dispersants. After receiving BP's response, which defended the company's choice in selecting Corexit, EPA and the U.S. Coast Guard announced that they were not satisfied with BP's evaluation of alternatives and that EPA would undertake its own independent evaluation to determine the best dispersant available in the volumes necessary for this crisis. In the meantime, EPA and the U.S. Coast Guard directed BP to reduce the overall volume of dispersant by 75% from the maximum daily amount used (70,000 gallons per day) and to completely eliminate surface application of dispersants unless absolutely necessary.

An analysis of BP's recent dispersant use indicates that the company has not eliminated the surface application of dispersants, and although it has reduced the amount of dispersant used subsurface at the well head, it has exceeded the recommended daily level of 15,000 gallons at times. The surface application volumes, while reduced by approximately 50%, have in no way ceased, as daily volumes used hover around 10,000 gallons. In order to understand the reasons why BP continues to use such high volumes of Corexit, I ask that you respond to the following questions.

1. In its May 26, 2010 directive<sup>1</sup> EPA and the U.S. Coast Guard instructed BP to eliminate surface application of dispersants, except in rare cases. While in the few days following the directive, the amount of surface application was reduced significantly, BP has not ceased surface application of dispersant. In fact for the last few days, more than 10,000 gallons of dispersants have been applied daily to the surface waters of the Gulf of Mexico. While this is a 50% reduction from the pre-directive daily average of approximately 20,000 gallons, the average daily volumes are certainly not zero.
  - a. Why is BP continuing to use dispersants on the surface waters of the Gulf of Mexico?
  - b. The May 26, 2010 directive explicitly stated that if BP wanted to use surface dispersant it needed to make a request in writing to the Federal on Scene Coordinator for approval by the United States Coast Guard. Please provide me with copies of the BP requests to the United States Coast Guard, responses to those requests and any associated documentation that would describe the circumstances surrounding the approval(s) for surface dispersant use after the May 26 directive.

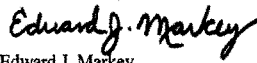
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<sup>1</sup> <http://www.epa.gov/bpspill/dispersants/directive-addendum3.pdf>

- c. The directive also instructed BP to use no more than 15,000 gallons per day of dispersant subsurface at the site of the well head. Since the directive was issued, BP has exceeded this daily maximum on four occasions (May 28, May 30, June 6, and June 20). Please provide me with copies of the BP requests to the United States Coast Guard to exceed these levels, as well as the responses to those requests.

Thank you for your assistance and cooperation in responding to this request. Should you have any questions, please have your staff contact Dr. Michal Freedhoff of the Subcommittee staff or Dr. Avenel Joseph of my staff at 202-225-2836.

Sincerely,



Edward J. Markey  
Chairman  
Subcommittee on Energy and Environment

- cc. The Honorable Henry A. Waxman  
Chairman, House Energy and Commerce Committee
- The Honorable Joe Barton  
Ranking Member, House Energy and Commerce Committee
- The Honorable Fred Upton  
Ranking Member  
Subcommittee on Energy and Environment



National Incident Commander  
Deepwater Horizon Response

2100 Second Street, S.W.  
Washington, DC 20593-0001  
Staff Symbol: NIC  
Phone: (202) 372-1710  
Fax: (202) 372-1933

3100  
July 12, 2010

The Honorable Edward J. Markey  
Chairman, Subcommittee on Energy and Environment  
Committee on Energy and Commerce  
House of Representatives  
Washington, DC 20515-6115

Dear Mr. Chairman:

This correspondence responds to your letter dated June 24, 2010 regarding the use of dispersants to mitigate the effects of the Deepwater Horizon (DWH) oil spill. You requested to know why BP is continuing to use surface dispersant in the Gulf of Mexico after being told by the EPA and Coast Guard to completely eliminate surface application of dispersants unless absolutely necessary. As you are aware, the EPA and Coast Guard signed the May 26, 2010 order directing BP to minimize the overall use of dispersant and to apply it on the surface rarely. That directive also required BP to seek approval from the FOSC prior to the use of surface dispersants.

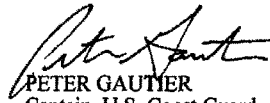
The Federal On-Scene Coordinator (FOSC) has approved the use of surface dispersants when needed for the control of volatile organic compounds and vapors at the wellhead site to ensure the safety of source control vessels and operators, and as a last resort to disperse oil when mechanical recovery and in-situ burning are insufficient or unemployable due to weather conditions. Recovery of discharged oil at the wellhead, combined with mechanical recovery and in-situ burning are the preferred methods of removing oil from the environment. Current directives support the optimum removal of oil using mechanical means with the controlled and monitored application of dispersants only when absolutely necessary to preserve the health and safety of workers at the well site and to minimize shoreline impacts.

Your letter requested copies of the BP requests to the Coast Guard to use surface dispersants; responses to those requests; and any associated documentation that would describe the circumstances surrounding the approval of surface dispersant use after the May 26, 2010 directive. Your letter also requested copies of the BP requests to the Coast Guard to exceed 15,000 gallons per day for subsurface dispersant use.

The Coast Guard has documents responsive to your request. On a July 7 call, my Legislative Affairs Officer (Commander Todd Offutt) and Dr. Michal Freedhoff of your Energy and Commerce Committee staff made arrangements to transmit the electronic record of nearly 250 pages.

My National Incident Command staff is prepared to respond to any additional questions you may have, but please feel free to contact me with any specific concerns.

Sincerely,

A handwritten signature in black ink, appearing to read "Peter Gautier", written in a cursive style.

PETER GAUTIER  
Captain, U.S. Coast Guard  
Chief of Staff  
National Incident Command

HENRY A. WAXMAN, CALIFORNIA  
CHAIRMAN

JOE BARTON, TEXAS  
RANKING MEMBER

ONE HUNDRED ELEVENTH CONGRESS  
**Congress of the United States**  
**House of Representatives**  
COMMITTEE ON ENERGY AND COMMERCE  
2125 RAYBURN HOUSE OFFICE BUILDING  
WASHINGTON, DC 20515-6115

Majority (202) 225-2927  
Minority (202) 225-3641

June 24, 2010

The Honorable Lisa Jackson  
Administrator  
U.S. Environmental Protection Agency  
Ariel Rios Building  
1200 Pennsylvania Avenue, N.W.  
Washington, DC 20460

Dear Administrator Jackson,

I write to request additional information on the use of dispersants as a means to mitigate the effects of the oil that has been spewing into the Gulf of Mexico for 9 weeks. As slicks and plumes of oil and gas expand in the Gulf, the list of unknowns that surround the disaster's impact on the marine life and human health continue to grow.

Although I appreciate your May 27 response to my May 17, 2010 letter, I am concerned that your response left many questions unanswered, in part because of the timeframes required to perform necessary scientific analysis. Additionally, while the volume of dispersant BP was using following your May 26, 2010 directive was consistent with your request that the use of Corexit be greatly reduced, BP has yet to achieve the overall goal set forth by the EPA and US Coast Guard.

One of BP's primary mitigation strategies involves the application of chemical dispersants to break the oil into tiny droplets that scatter in the ocean and may be more readily consumed by microbes. These chemicals are being sprayed onto the surface of the ocean, and for the first time in U.S. history are also being applied at the source of the leak, almost one mile below sea surface. Millions of gallons of chemical dispersant have been added to the Gulf waters, contributing to a toxic stew of chemicals, oil and gas with impacts that are not well understood.

There has been much speculation that the use of dispersants has contributed to the formation of large plumes or clouds of oil that are suspended well below the ocean

surface. Many experts have raised concerns about these plumes' potential to cause significant harm to aquatic life in the Gulf of Mexico. This can occur via two mechanisms. First, the toxic constituents of oil and dispersants can poison the aquatic life exposed to them and may lead to death or non-lethal harm to species and contamination of the marine food chain. Second, as naturally-occurring bacteria consume the oil, they also use up oxygen that is critical to the survival of many marine organisms. This can in turn lead to localized depletions of oxygen levels that could cause marine life to die of asphyxiation. Oxygen depleted at the depths that these plumes have been found can take years to replenish, causing long-term damage to the deep Gulf ecosystem. On June 23, 2010, NOAA scientists re-confirmed the existence of these plumes, and additionally confirmed that their characteristics are consistent with the use of chemically-dispersed oil.

In light of environmental concerns about dispersants, on May 20, 2010 EPA and the U.S. Coast Guard directed BP to identify and start using a dispersant that is of lower toxicity and higher efficacy than Corexit, the trademarked name for the most toxic and least effective of the EPA-approved dispersants. After receiving BP's response, which defended the company's choice in selecting Corexit, EPA and the U.S. Coast Guard announced that they were not satisfied with BP's evaluation of alternatives and that EPA would undertake its own independent evaluation to determine the best dispersant available in the volumes necessary for this crisis. In the meantime, EPA and the U.S. Coast Guard directed BP to reduce the overall volume of dispersant by 75% from the maximum daily amount used (70,000 gallons per day) and to completely eliminate surface application of dispersants unless absolutely necessary.

An analysis of BP's recent dispersant use indicates that the company has not eliminated the surface application of dispersants, and although it has reduced the amount of dispersant used subsurface at the well head, it has exceeded the recommended daily level of 15,000 gallons at times. The surface application volumes, while reduced by approximately 50%, have in no way ceased, as daily volumes used hover around 10,000 gallons.

In your May 27<sup>th</sup> letter you described some technical aspects of the "Rocky Shore Test" which is a requirement for dispersant approval in the United Kingdom and was failed by the Corexit products currently being used in the Gulf. In this test, a type of snail, the common limpet, is sprayed with oil alone (which is highly lethal) or with dispersant alone, and the number of snails that lose adhesion (which for purposes of the test are considered to be dead) are counted. Your letter describes this test as being a measure of "relative harm", as compared to oil alone, and not a measure of "inherent toxicity", but when reviewing the results of the Corexit Rocky Shore test (Attachment 1), I was shocked to learn that Corexit dispersant alone was as much as twice as lethal as oil—a result that is of grave significance.

Finally, a month has passed since EPA launched its independent investigation into alternative dispersants. While I understand this type of scientific evaluation takes time to accomplish, I am writing to get an update on the progress of these studies as well as to follow up on your response to my May 17, 2010 letter. Consequently, I ask that you

respond to the following questions.

1. As you know, both Corexit 9500 and 9527 were removed from the UK list of approved dispersants for near-shore use over a decade ago, because they failed to pass the required "Rocky Shore Test" since use of the Corexit products alone were more lethally toxic to a common sea snail than oil.
  - a. Has EPA explored the effect Corexit 9500, the dispersant currently being used in the Gulf of Mexico, may have on similar grazing organisms, such as sea slugs and squids that are present in the Gulf of Mexico? If, so which species did you evaluate and what were the results of these tests? If not, why not?
  - b. Has EPA evaluated the potential for dispersants mixed into underwater plumes to travel to areas of Florida that have shores that may be similar to a "rocky shore"? If so, has EPA determined what effect these chemicals may have on rocky shore organisms?
2. What types of tests is EPA performing on dispersants other than Corexit to determine if there are any less toxic and more effective alternatives to aid in the mitigation efforts? Is EPA evaluating BP's claim that some other dispersant ingredients break down into chemicals that may have endocrine disrupting properties? Please provide all results of this evaluation.
3. As EPA moves forward, what type of revisions does it plan on making to the way in which dispersants are evaluated for addition to the National Contingency Plan (NCP) Product Schedule?
4. In its May 26, 2010 directive<sup>1</sup> EPA and the U.S. Coast Guard instructed BP to eliminate surface application of dispersants, except in rare cases. While in the few days following the directive, the amount of surface application was reduced significantly, BP has not ceased surface application of dispersant. In fact for the last few days, more than 10,000 gallons of dispersants have been applied daily to the surface waters of the Gulf of Mexico. While this is a 50% reduction from the pre-directive daily average of approximately 20,000 gallons, the average daily volumes are certainly not zero.
  - a. The May 26, 2010 directive explicitly stated that if BP wanted to use surface dispersant it needed to make a request in writing to the Federal on Scene Coordinator for approval by the United States Coast Guard. Please provide me with copies of the BP requests to the United States Coast Guard, and any EPA feedback provided to the Coast Guard as these requests were considered.
  - b. The directive also instructed BP to use no more than 15,000 gallons per day of dispersant subsurface at the site of the well head. Since the directive was issued, BP has exceeded this daily maximum on four

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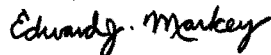
<sup>1</sup> <http://www.epa.gov/bpspill/dispersants/directive-addendum3.pdf>

occasions (May 28, May 30, June 6, and June 20). Please provide me with copies of the BP requests to the United States Coast Guard, and any EPA feedback provided to the Coast Guard as these requests were considered.

5. On May 20, 2010 the Department of Homeland Security (DHS) and EPA wrote a letter to BP CEO, Tony Hayward, urging that the company make publically available all information and data related to the Deepwater Horizon oil spill on a website to be updated by BP daily. BP responded to this request committing to make every effort to collect and upload relevant data to BP's website. At a hearing held by the Oversight and Investigations Subcommittee of the Energy and Commerce Committee on June 17, in response to one of my questions, Mr. Hayward testified that all data and information made by BP is "being published, as we make them, on a variety of web sites." It is my understanding that EPA is publishing only a portion of the data submitted by BP.
  - a. Has EPA confirmed that all the data submitted by BP is in fact being published? If so, where? If not, what steps will EPA take to ensure that BP is being transparent with all data and information relating to the Deepwater Horizon oil spill and related clean up efforts?

Thank you for your assistance and cooperation in responding to this request. Should you have any questions, please have your staff contact Dr. Michal Freedhoff of the Subcommittee staff or Dr. Avenel Joseph of my staff at 202-225-2836.

Sincerely,



Edward J. Markey  
Chairman  
Subcommittee on Energy and Environment

cc. The Honorable Henry A. Waxman  
Chairman, House Energy and Commerce Committee

The Honorable Joe Barton  
Ranking Member, House Energy and Commerce Committee

The Honorable Fred Upton  
Ranking Member  
Subcommittee on Energy and Environment



## Attachment 1

Toxicity Test Analysis v0.3

1st Run

B100

Rocky Shore test

(6 hours exposure and 72 hours recovery)

08/06/98

Reference: Fresh Kuwait Crude Oil, 4/96 :

| Tank no. | no. dead | no. alive | no. in tank | %Mortality |
|----------|----------|-----------|-------------|------------|
| 1        | 8        | 12        | 20          | 40.0       |
| 2        | 6        | 14        | 20          | 30.0       |
| 3        | 17       | 3         | 20          | 85.0       |
| 4        | 8        | 12        | 20          | 40.0       |
| 5        | 10       | 10        | 20          | 50.0       |
| Total    | 49       | 51        | 100         | 49.00      |

Chi-squared 14.566  
d.f. 4  
p-value for chi-squared test 0.012

Testing at 5% significance level,  
Reference tanks are **NOT HOMOGENEOUS**

Test Treatment: Corexit EC9500 ( 495 ) :  
2/3 , 10 %

| Tank no. | no. dead | no. alive | no. in tank | %Mortality |
|----------|----------|-----------|-------------|------------|
| 6        | 17       | 3         | 20          | 85.0       |
| 7        | 15       | 5         | 20          | 75.0       |
| 8        | 18       | 2         | 20          | 90.0       |
| 9        | 17       | 3         | 20          | 85.0       |
| 10       | 17       | 3         | 20          | 85.0       |
| Total    | 84       | 16        | 100         | 84.00      |

Chi-squared 1.786  
d.f. 4  
p-value for chi-squared test 0.775

Testing at 5% significance level,  
Treatment tanks are **HOMOGENEOUS**

## COMPARISON OF MORTALITY RATES

Reference %mortality 49.00  
Treatment %mortality 84.00

D, Treatment %mortality - Reference %mortality 35.00

Standard error of D 6.20

95% Confidence interval for D 22.8 to 47.2

H0: treatment mort. = reference mort. , H1: treatment mort. > reference mort.

Test statistic 5.65 p-value = 0.000

Treatment mortality > reference mortality  
and INCREASE IS SIGNIFICANT at 5% significance level

TEST INVALID: Reference tanks are not homogeneous

Notes:

Reference notes appear here

Data entered by:  
Date:

Checked by:  
Date:

Attachment 1

Toxicity Test Analysis v0.3

1st Run

B100

Rocky Shore test

(6 hours exposure and 72 hours recovery)

08/06/88

Reference: Fresh Kuwait Crude Oil, 4/96 :

| Tank no. | no. dead | no. alive | no. in tank | %Mortality |
|----------|----------|-----------|-------------|------------|
| 1        | 8        | 12        | 20          | 40.0       |
| 2        | 6        | 14        | 20          | 30.0       |
| 3        | 17       | 3         | 20          | 85.0       |
| 4        | 8        | 12        | 20          | 40.0       |
| 5        | 10       | 10        | 20          | 50.0       |
| Total    | 49       | 51        | 100         | 49.00      |

Chi-squared 14.566  
d.f. 4  
p-value for chi-squared test 0.012  
Testing at 5% significance level,  
Reference tanks are NOT HOMOGENEOUS

Test Treatment: Corexit EC9527 ( 496 ) :  
2/3 , 10 %

| Tank no. | no. dead | no. alive | no. in tank | %Mortality |
|----------|----------|-----------|-------------|------------|
| 11       | 15       | 5         | 20          | 75.0       |
| 12       | 11       | 9         | 20          | 55.0       |
| 13       | 15       | 5         | 20          | 75.0       |
| 14       | 12       | 8         | 20          | 60.0       |
| 15       | 11       | 9         | 20          | 55.0       |
| Total    | 64       | 36        | 100         | 64.00      |

Chi-squared 3.646  
d.f. 4  
p-value for chi-squared test 0.456  
Testing at 5% significance level,  
Treatment tanks are HOMOGENEOUS

## COMPARISON OF MORTALITY RATES

Reference %mortality 49.00  
Treatment %mortality 64.00

D, Treatment %mortality - Reference %mortality 15.00

Standard error of D 6.93

95% Confidence interval for D 1.4 to 28.6

H0: treatment mort. = reference mort. , H1: treatment mort. &gt; reference mort.

Test statistic 2.16 p-value = 0.015

Treatment mortality > reference mortality  
and INCREASE IS SIGNIFICANT at 5% significance level

TEST INVALID: Reference tanks are not homogeneous

## Notes:

Reference notes appear here

Treatment notes appear here

Data entered by:

Checked by:

Date:

Date:

**Attachment 1**

Toxicity Test Analysis v0.3

2nd Run

B100

Rocky Shore test

(6 hours exposure and 72 hours recovery)

19/06/98

Reference: Fresh Kuwait Crude Oil, 4/96 :

| Tank no. | no. dead | no. alive | no. in tank | %Mortality |
|----------|----------|-----------|-------------|------------|
| 1        | 6        | 14        | 20          | 30.0       |
| 2        | 7        | 12        | 19          | 36.8       |
| 3        | 5        | 15        | 20          | 25.0       |
| 4        | 6        | 13        | 19          | 31.6       |
| 5        | 12       | 8         | 20          | 60.0       |
| Total    | 36       | 62        | 98          | 36.73      |

Chi-squared 6.451  
d.f. 4  
p-value for chi-squared test 0.265  
Testing at 5% significance level,  
Reference tanks are HOMOGENEOUS

Test Treatment: Corexit EC9500 ( 495 ) :  
2/3 , 10 %

| Tank no. | no. dead | no. alive | no. in tank | %Mortality |
|----------|----------|-----------|-------------|------------|
| 11       | 14       | 6         | 20          | 70.0       |
| 12       | 19       | 1         | 20          | 95.0       |
| 13       | 16       | 4         | 20          | 80.0       |
| 14       | 15       | 5         | 20          | 75.0       |
| 15       | 14       | 6         | 20          | 70.0       |
| Total    | 78       | 22        | 100         | 78.00      |

Chi-squared 5.012  
d.f. 4  
p-value for chi-squared test 0.286  
Testing at 5% significance level,  
Treatment tanks are HOMOGENEOUS

**COMPARISON OF MORTALITY RATES**

Reference %mortality 36.73  
Treatment %mortality 78.00

D, Treatment %mortality - Reference %mortality 41.27

Standard error of D 6.39

95% Confidence Interval for D 28.7 to 53.8

H0: treatment mort. = reference mort. , H1: treatment mort. > reference mort.

Test statistic 6.45 p-value = 0.000

Treatment mortality > reference mortality  
and INCREASE IS SIGNIFICANT at 5% significance level

**Notes:**

Reference notes appear here

Treatment notes appear here

Data entered by:

Checked by:

Date:

Date:

ATTACHMENT 1

Toxicity Test Analysis v0.3

2nd Run

B100

Rocky Shore test

(6 hours exposure and 72 hours recovery)

19/06/98

Reference: Fresh Kuwait Crude Oil, 4/96 :

| Tank no. | no. dead | no. alive | no. in tank | %Mortality |
|----------|----------|-----------|-------------|------------|
| 1        | 6        | 14        | 20          | 30.0       |
| 2        | 7        | 12        | 19          | 36.8       |
| 3        | 5        | 15        | 20          | 25.0       |
| 4        | 6        | 13        | 19          | 31.6       |
| 5        | 12       | 8         | 20          | 60.0       |
| Total    | 36       | 62        | 98          | 36.73      |

Chi-squared 6.451  
d.f. 4  
p-value for chi-squared test 0.265  
Testing at 5% significance level,  
Reference tanks are **HOMOGENEOUS**

Test Treatment: Corexit EC9527 ( 496 ) :  
2/3 , 10 %

| Tank no. | no. dead | no. alive | no. in tank | %Mortality |
|----------|----------|-----------|-------------|------------|
| 11       | 11       | 9         | 20          | 55.0       |
| 12       | 11       | 9         | 20          | 55.0       |
| 13       | 12       | 8         | 20          | 60.0       |
| 14       | 15       | 5         | 20          | 75.0       |
| 15       | 7        | 13        | 20          | 35.0       |
| Total    | 56       | 44        | 100         | 56.00      |

Chi-squared 6.656  
d.f. 4  
p-value for chi-squared test 0.155  
Testing at 5% significance level,  
Treatment tanks are **HOMOGENEOUS**

**COMPARISON OF MORTALITY RATES**

Reference %mortality 36.73  
Treatment %mortality 56.00

D, Treatment %mortality - Reference %mortality 19.27

Standard error of D 6.95

95% Confidence interval for D 5.6 to 32.9

H0: treatment mort. = reference mort. , H1: treatment mort. > reference mort.

Test statistic 2.77 p-value = 0.003

Treatment mortality > reference mortality  
and INCREASE IS SIGNIFICANT at 5% significance level

**Notes:**

Reference notes appear here  
Treatment notes appear here

Data entered by:  
Date:

Checked by:  
Date:



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

**AUG 05 2010**

THE ADMINISTRATOR

The Honorable Edward J. Markey  
Chairman  
Subcommittee on Energy and Environment  
Committee on Energy and Commerce  
U.S. House of Representatives  
Washington, DC 20515

Dear Mr. Chairman:

Thank you for your June 24, 2010 letter requesting additional information from the U.S. Environmental Protection Agency (EPA) relating to the use of dispersants in the Gulf of Mexico following the April 20, 2010 Deepwater Horizon mobile offshore drilling unit explosion and resulting oil spill. Since these events, the Administration's efforts have focused on responding to the disaster and ensuring that the responsible parties stop the discharge, remove the oil, and pay for all costs and damages.

EPA recognizes and shares your concern regarding the use of large quantities of dispersants during operations to contain the spill. As you know, EPA is working closely with its federal partners to ensure vigorous oversight of dispersant use and that an aggressive dispersant monitoring plan is implemented by BP and that data are regularly and rigorously reviewed. EPA and United States Coast Guard (USCG) efforts have resulted in a 75 percent drop in dispersant use from its peak levels. I believe that as the flow of oil is reduced or stopped, we must severely curtail use of dispersants.

Enclosed are responses to your specific questions. Please be assured that the Agency is committed to continuing to provide full support to the USCG and the Unified Command (UC), and will continue to take a proactive and robust role in monitoring, identifying, and responding to potential public health and environmental concerns. If you have further questions or if we can be of further assistance, please don't hesitate to contact me, or your staff may contact Arvin Ganesan at (202) 564-4741.

Sincerely,

A handwritten signature in black ink, appearing to read "Lisa P. Jackson", is written over a horizontal line.

Lisa P. Jackson

Enclosure

**Enclosure**

**1. As you know, both Corexit 9500 and 9527 were removed from the UK list of approved dispersants for near-shore use over a decade ago, because they failed to pass the required "Rocky Shore Test" since use of the Corexit products alone were more lethally toxic to a common sea snail than oil.**

**a. Has EPA explored the effect Corexit 9500, the dispersant currently being used in the Gulf of Mexico, may have on similar grazing organisms, such as sea slugs and squids that are present in the Gulf of Mexico? If, so which species did you evaluate and what were the results of these tests? If not, why not?**

**Response:** EPA has not yet explored the effect of Corexit B9500A on grazing organisms because the water monitoring data we have to date do not show that dispersant is persisting in the water column or settling to the sea floor where such organisms exist. EPA and the USCG do not allow dispersant application on shorelines or within three nautical miles of shore.

**b. Has EPA evaluated the potential for dispersants mixed into underwater plumes to travel to areas of Florida that have shores that may be similar to a "rocky shore"? If so, has EPA determined what effect these chemicals may have on rocky shore organisms?**

**Response:** As noted previously, the water monitoring data we have to date does not show that dispersant is persisting in the water column. In addition, EPA and the USCG do not allow dispersant application on shorelines or within three nautical miles of shore. Consequently, organisms that exist in "rocky shore-like" environments would not be exposed.

It is important to clarify that the UK "Rocky Shore Test" does not measure organism lethality or toxicity per se. A dispersant may fail the "Rocky Shore Test" if test species (Common Limpet [*Patella vulgaris*]) experience a "loss of adhesion" due to the presence of surfactants in the product. Any limpets which detach during the test, whether alive or dead, are counted as dead. Consequently, it cannot be concluded from the test data that the Corexit products are more lethally toxic than the Kuwaiti Crude oil used in the test. EPA has already conducted laboratory tests to determine the lethal concentration of Corexit to two aquatic species. These results show that Corexit is practically non-toxic to one species and slightly toxic to the other. Corexit is less toxic than oil and we are in the process of determining the lethal concentration of the Louisiana Crude oil alone and the crude oil mixed with dispersant to two aquatic species to confirm.

**2. What types of tests is EPA performing on dispersants other than Corexit to determine if there are any less toxic and more effective alternatives to aid in the mitigation efforts? Is EPA evaluating BP's claim that some other dispersant ingredients break down into chemicals that may have endocrine disrupting properties? Please provide all results of this evaluation.**

**Response:** Following BP's response, and to ensure that decisions about ongoing dispersant use in the Gulf of Mexico are grounded in the best available science and data, EPA began its own scientific testing of eight dispersant products on the National Contingency Plan (NCP) Product Schedule. These dispersant products are: Dispersit SPC 1000, Nokomis 3-F4, Nokomis 3-AA, ZI-400, SAF-RON GOLD, Sea Brat #4, Corexit 9500A and JD-2000. EPA required toxicity tests to standard test species, including a sensitive species of Gulf of Mexico invertebrate (mysid shrimp) and fish (silverside) which are common species in Gulf of Mexico estuarine habitats. These species are considered to be representative of the sensitivity of many species in the Gulf of Mexico, based on years of toxicity testing with other substances. These tests were designed to determine toxicity effects so that a relative comparison could be made. They were conducted over a range of concentrations, including those much greater than what aquatic life is expected to encounter in the Gulf.

On June 30, 2010, EPA released the results of initial screening tests to assess cytotoxicity (cell death), endocrine activity, and acute toxicity of eight available dispersants. *In vitro* assays were used to test the degree to which these eight dispersants are toxic to various types of mammalian cells. The results indicated that none of the eight dispersants tested, including the product currently in use in the Gulf, COREXIT 9500 A, displayed biologically significant endocrine disrupting activity.

While the results showed that dispersant products alone (not mixed with oil) have roughly the same impact on aquatic life, JD-2000 and Corexit EC9500A were generally less toxic to silverside fish and JD-2000 and SAF-RON GOLD were least toxic to mysid shrimp. Two dispersants showed a weak signal in one of the four estrogen receptor (ER) assays, but integrating over all of the ER and androgen receptor (AR) results these data do not indicate that any of the eight dispersants display biologically significant endocrine activity via the androgen or estrogen signaling pathways. None of the dispersants triggered cell death at the concentrations of dispersants expected in the Gulf.

The results from the second phase of EPA's testing, released on August 2, 2010, demonstrate that for all eight dispersants tested on both test species, the dispersant alone was less toxic than the dispersant-oil mixture. Tests on oil alone had similar toxicity to mysid shrimp as the tests on dispersant-oil mixtures, with the exception of the mixture of Nokomis 3-AA and oil, which was found to be more toxic. Oil alone was found to be more toxic to mysid shrimp than the eight dispersants when tested alone (data for the silverside fish was inconclusive and are being re-tested with oil alone). The dispersant-oil mixtures can be generally categorized in the moderately toxic range. These externally peer reviewed results indicate that the eight dispersants, when tested alone and in combination with oil, are similar to one another. The results of this testing are posted on EPA's website: <http://www.epa.gov/bpspill/reports/phase2dispersant-toxtest.pdf> To date, for subsurface monitoring, we have not seen dissolved oxygen levels approach levels of concern to aquatic life and no excessive mortality in rotifers. This confirms that the dispersant used in response to the Gulf oil spill, Corexit 9500A, is generally no more or less toxic than the other available and tested alternatives.

**3. As EPA moves forward, what type of revisions does it plan on making to the way in which dispersants are evaluated for addition to the National Contingency Plan (NCP) Product Schedule?**

**Response:** Given the circumstances associated with the current spill, EPA will undertake a review and evaluation of existing laws and regulations regarding dispersants for potential revision. Issues to address include toxicity, efficacy, and other criteria associated with EPA's NCP Sub-part J regulation and the development of new tests and criteria.

**4. In its May 26, 2010 directive<sup>11</sup> EPA and the U.S. Coast Guard instructed BP to eliminate surface application of dispersants, except in rare cases. While in the few days following the directive, the amount of surface application was reduced significantly, BP has not ceased surface application of dispersant. In fact for the last few days, more than 10,000 gallons of dispersants have been applied daily to the surface waters of the Gulf of Mexico. While this is a 50% reduction from the pre-directive daily average of approximately 20,000 gallons, the average daily volumes are certainly not zero.**

**a. The May 26, 2010 directive explicitly stated that if BP wanted to use surface dispersant it needed to make a request in writing to the Federal on Scene Coordinator for approval by the United States Coast Guard. Please provide me with copies of the BP requests to the United States Coast Guard, and any EPA feedback provided to the Coast Guard as these requests were considered.**

**b. The directive also instructed BP to use no more than 15,000 gallons per day of dispersant subsurface at the site of the well head. Since the directive was issued, BP has exceeded this daily maximum on four occasions (May 28, May 30, June 6, and June 20). Please provide me with copies of the BP requests to the United States Coast Guard, and any EPA feedback provided to the Coast Guard as these requests were considered.**

**Response:**

Since EPA and USCG issued this directive, dispersant use has fallen by 75% from its peak levels. BP's requests for dispersant use must include information indicating that all other methods of spill recovery and response, such as in situ burning and skimming, are being used to the maximum extent possible before relying on dispersants. EPA has provided input to USCG, the Federal On-Scene Coordinator (FOSC), to encourage the reduction of surface application of dispersants so that they are used only when other response methods are not feasible, and to require BP to demonstrate that the minimum of dispersant is used. USCG is the ultimate authority with respect to these variances. In addition, the National Incident Commander has worked very closely with the EPA Administrator to support careful monitoring and assessment of dispersants.

BP's requests to the United States Coast Guard are available at:  
<http://www.deepwaterhorizonresponse.com/go/doctype/2931/57851/>



**5. On May 20, 2010 the Department of Homeland Security (DHS) and EPA wrote a letter to BP CEO, Tony Hayward, urging that the company make publically available all information and data related to the Deepwater Horizon oil spill on a website to be updated by BP daily. BP responded to this request committing to make every effort to collect and upload relevant data to BP's website. At a hearing held by the Oversight and Investigations Subcommittee of the Energy and Commerce Committee on June 17, in response to one of my questions, Mr. Hayward testified that all data and information made by BP is "being published, as we make them, on a variety of web sites." It is my understanding that EPA is publishing only a portion of the data submitted by BP.**

**a. Has EPA confirmed that all the data submitted by BP is in fact being published? If so, where? If not, what steps will EPA take to ensure that BP is being transparent with all data and information relating to the Deepwater Horizon oil spill and related clean up efforts?**

**Response:** EPA has reviewed the data BP has published and has confirmed that the data posted on its website addresses the May 20, 2010 letter. BP has been posting environmental data on its publicly available website at [www.BP.com](http://www.BP.com) by a variety of methods, including tabular and spatial methods. BP has also been providing its environmental data to EPA's analytical data management system. EPA and USCG will continue to insist that BP provide comprehensive information and will continue to ensure that BP is being transparent and forthcoming with environmental data and information relating to the Deepwater Horizon oil spill and related clean up efforts and will take appropriate steps when deficiencies are found.

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### House of Representatives

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June 24, 2010

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Mr. Lamar McKay  
 President and CEO,  
 BP America, Inc.  
 501 Westlake Park Boulevard  
 Houston, Texas, 70779

Dear Mr. McKay:

At approximately 8:45 a.m. Eastern time on June 23, 2010, BP's efforts to collect oil from the Lower Marine Riser Package (LMRP) cap on the damaged Macondo well were disrupted and BP was forced to remove the cap. As we understand the situation, one of the seawater vents on the cap was inadvertently closed, reportedly due to an ROV bumping the vent. This reportedly caused formation of ice crystals, and gas and liquids then rose through the vent. BP decided to immediately disconnect the collection system, remove the cap and check for ice crystals. Throughout the day, oil flowed unimpeded from the top of the severed LMRP until BP replaced the cap that evening.

The end result of this mishap is that thousands more barrels of oil flowed into the sea during the duration of the event. We cannot afford such errors, and we need to understand clearly the facts behind it. We also need to better understand BP's plans for coping with such a contingency and for moving as quickly as possible to completely shut off the flow from the well. In addition, we need to know what are the limiting factors relating to such steps that may require or add to any delay in moving forward immediately.

In order to be better able to judge for ourselves the situation, please answer the following questions:

- 1) What was the cause of the vent closing? Was it bumped by an ROV? If so, please provide video footage of the bumping incident. If high-definition footage is available, please provide the video in that format.

Mr. Lamar McKay  
Page 2 of 2

- 2) What safety protections are provided with regard to the collection system? Is it possible for gas to rise through the collection system and create another explosion? What systems, if any, prevent such a possibility?
- 3) In terms of oil collection, is the cap, after being replaced, functioning as well as it previously did? Is it performing better? Or did the incident cause the performance of the cap to worsen?
- 4) When will the next cap be put in place and what is its current state of readiness? What are the factors that prevent placement of the new cap immediately? Is the cap already fabricated and in transit or onsite? Are there additional components of the collection system that require fabrication or transport to the site? Or is placement of the cap being delayed solely due to the lack of sufficient surface handling capacity?
- 5) What safety measures devices will be installed on this new cap to prevent accidents, explosions or damage to the well bore?
- 6) Please summarize the factors that could impact the timing or success of the new cap including, but not limited to, the need for fabrication of devices or new tools, arrival of supplies, arrival of processing, handling and storage capacity, and the need for any additional equipment or materials.
- 7) Please provide copies of all documents in your possession created since April 20, 2010 that relate to plans for efforts to place caps or oil collection systems on the well. Please provide copies of all such documents that are in your personal possession by close of business on Tuesday June 29<sup>th</sup>. Please provide copies of all such documents in the possession of, or addressed to, Mr. Tony Hayward, Mr. Doug Suttles, Mr. Bob Dudley and Mr. Kent Wells within one week of receipt of this letter.

Sincerely,



Edward J. Markey  
Chairman  
Energy and Environment Subcommittee  
Energy and Commerce Committee

Cc: Honorable Henry Waxman, Chairman,  
Honorable Joe Barton, Ranking Member  
Honorable Fred Upton, Ranking Member

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 ROBERT E. LATTI, OHIO

June 28, 2010

Mr. James Mulva  
 Chairman, President, and Chief Executive Officer  
 ConocoPhillips Co.  
 600 North Dairy Ashford  
 P.O. Box 2197  
 Houston, Texas 77232-2197

Dear Mr. Mulva:

At the June 15, 2010, hearing before the Subcommittee on Energy and Environment entitled "Drilling Down on America's Energy Future: Safety, Security, and Clean Energy," you and other oil company executives agreed that your oil spill response plans contain significant flaws.

Each of the oil companies' oil spill response plans are practically identical to the tragically flawed BP oil spill response plan. These oil spill response plans for the Gulf of Mexico even included references to protecting walrus and other animals that don't inhabit the Gulf and listed a deceased scientist as an emergency resource. You and other witnesses agreed that these flaws were "embarrassing."

No oil company appears to be better prepared for a disastrous oil spill than BP was. As Rex Tillerson of ExxonMobil testified during the hearing, "when these things happen, we are not well-equipped to deal with them." Our view is that the moratorium on drilling new wells in the Gulf should be reinstated until the oil companies can demonstrate that their oil spill response plans are capable of protecting the Gulf region from another subsea blowout.

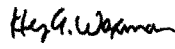
Mr. James Mulva  
June 28, 2010  
Page 2

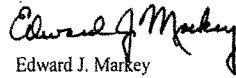
To assist the Committee in its investigation, we request that you provide answers to the following four questions no later than Friday, July 2, 2010:


1. Is your company's oil spill response plan for the Gulf of Mexico adequate to protect the Gulf region from the consequences of a subsea blowout similar to the blowout at the Macondo well? If so, please explain how this conclusion is reached.
2. Each of the five oil companies that testified on June 15, 2010, relied upon the Marine Spill Response Corporation (MSRC) and its equipment to respond to potential oil spills. The MSRC is now using its equipment to respond to the BP oil spill. Are there other resources and equipment available to your company in the event of an oil spill in the Gulf of Mexico that are not currently being used to respond to the BP spill?
3. Many resources that had been held in reserve for spills elsewhere in the country, such as the west coast and Alaska, have been transported for use in the Gulf of Mexico. Are there other resources and equipment available to your company in the event of an oil spill outside of the Gulf of Mexico that are not currently being used to respond to the BP spill?
4. Do you plan to revise your oil spill response plan? If so, when will this revision be completed?

Thank you for your prompt attention to this important matter.

Sincerely,

  
Henry A. Waxman  
Chairman

  
Edward J. Markey  
Chairman  
Subcommittee on Energy  
and Environment

  
Bart Stupak  
Chairman  
Subcommittee on Oversight  
and Investigations

Enclosure

cc: The Honorable Joe Barton  
Ranking Member

The Honorable Fred Upton  
Ranking Member  
Subcommittee on Energy  
and Environment

Mr. James Mulva  
June 28, 2010  
Page 3

The Honorable Michael C. Burgess  
Ranking Member  
Subcommittee on Oversight  
and Investigations

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 STEVE SCALISE, LOUISIANA  
 PARKER ORRITH, ALABAMA  
 ROBERT E. LATTI, OHIO

June 28, 2010

Mr. John S. Watson  
 Chairman and Chief Executive Officer  
 Chevron Corporation  
 6001 Bollinger Canyon Road  
 San Ramon, CA 94583

Dear Mr. Watson:

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Each of the oil companies' oil spill response plans are practically identical to the tragically flawed BP oil spill response plan. These oil spill response plans for the Gulf of Mexico even included references to protecting walruses and other animals that don't inhabit the Gulf and listed a deceased scientist as an emergency resource. You and other witnesses agreed that these flaws were "embarrassing."

No oil company appears to be better prepared for a disastrous oil spill than BP was. As Rex Tillerson of ExxonMobil testified during the hearing, "when these things happen, we are not well-equipped to deal with them." Our view is that the moratorium on drilling new wells in the Gulf should be reinstated until the oil companies can demonstrate that their oil spill response plans are capable of protecting the Gulf region from another subsea blowout.

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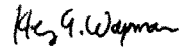
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Mr. John S. Watson  
June 28, 2010  
Page 2


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Edward J. Markey  
Chairman  
Subcommittee on Energy  
and Environment

  
Bart Stupak  
Chairman  
Subcommittee on Oversight  
and Investigations

Enclosure

cc: The Honorable Joe Barton  
Ranking Member

The Honorable Fred Upton  
Ranking Member  
Subcommittee on Energy  
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The Honorable Michael C. Burgess  
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Mr. Marvin Odum  
President and Upstream Americas Director  
Shell Oil Company  
North American Headquarters  
Two Houston Center, Plaza Level 1  
909 Fannin Street  
Houston, Texas 77010

Dear Mr. Odum:

At the June 15, 2010, hearing before the Subcommittee on Energy and Environment entitled "Drilling Down on America's Energy Future: Safety, Security, and Clean Energy," you and other oil company executives agreed that your oil spill response plans contain significant flaws.

Each of the oil companies' oil spill response plans are practically identical to the tragically flawed BP oil spill response plan. These oil spill response plans for the Gulf of Mexico even included references to protecting walrus and other animals that don't inhabit the Gulf and listed a deceased scientist as an emergency resource. You and other witnesses agreed that these flaws were "embarrassing."

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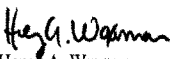
Mr. Marvin Odum  
June 28, 2010  
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4. Do you plan to revise your oil spill response plan? If so, when will this revision be completed?

Thank you for your prompt attention to this important matter.

Sincerely,

  
Henry A. Waxman  
Chairman

  
Edward J. Markey  
Chairman  
Subcommittee on Energy  
and Environment

  
Bart Stupak  
Chairman  
Subcommittee on Oversight  
and Investigations

Enclosure

cc: The Honorable Joe Barton  
Ranking Member

The Honorable Fred Upton  
Ranking Member  
Subcommittee on Energy  
and Environment

Mr. Marvin Odum  
June 28, 2010  
Page 3

The Honorable Michael C. Burgess  
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 PATRICK GRIFFITH, ALABAMA  
 ROBERT E. LATTI, OHIO

June 28, 2010

Mr. Rex W. Tillerson  
 Chairman and Chief Executive Officer  
 Exxon Mobil Corporation  
 5959 Las Colinas Boulevard  
 Irving, Texas 75039-2298

Dear Mr. Tillerson:

At the June 15, 2010, hearing before the Subcommittee on Energy and Environment entitled "Drilling Down on America's Energy Future: Safety, Security, and Clean Energy," you and other oil company executives agreed that your oil spill response plans contain significant flaws.

Each of the oil companies' oil spill response plans are practically identical to the tragically flawed BP oil spill response plan. These oil spill response plans for the Gulf of Mexico even included references to protecting walrus and other animals that don't inhabit the Gulf and listed a deceased scientist as an emergency resource. You and other witnesses agreed that these flaws were "embarrassing."

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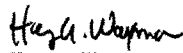
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Mr. Rex W. Tillerson  
June 28, 2010  
Page 2


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Thank you for your prompt attention to this important matter.

Sincerely,

  
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Subcommittee on Oversight  
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Enclosure

cc: The Honorable Joe Barton  
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The Honorable Fred Upton  
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 BETTY SUTTON, OHIO  
 BRUCE BRALEY, IOWA  
 PETER WELCH, VERMONT

Mr. Lamar McKay  
 President and CEO  
 BP America, Inc.  
 501 Westlake Park Boulevard  
 Houston, Texas, 70779

Dear Mr. McKay:

The Deepwater Horizon/Macondo well has now been spewing tens of thousands of barrels per day of oil into the Gulf of Mexico for more than 70 days. Due to BP's failure to control the well during the past two months, we are now confronted with a situation in which hurricane season has arrived and the well remains uncapped. Hurricanes and tropical storms have enormous potential to disrupt and delay BP's attempts to cap the well and to prevent the clean up of the immense quantity of oil that is now fouling the gulf. Yet BP's spill response plan for the Gulf of Mexico makes no mention of hurricanes. I am writing to obtain urgently needed information regarding BP's plans for handling tropical storms and hurricanes during this year's hurricane season.

Hurricane Alex is currently in the Gulf of Mexico. While it is not currently expected to pass directly over the accident site, the *Wall Street Journal* is reporting that the high seas it is expected to generate could delay plans to install a tighter fitting collection cap on the well by a week. According to BP official Kent Wells, three days of good weather are required in order to install the cap.

In order that we may fully understand the situation I ask that you answer the following questions immediately:

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June 30, 2010

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Mr. McKay  
Page 2 of 2

- 1) What is BP's plan for spill response in the event that a tropical storm or hurricane passes over the overall spill area? Does BP have any such a plan or plans for increasing severity of hurricanes? Or does BP plan on simply "playing it by ear" up to the point at which a full evacuation is required and all spill response operations cease?
- 2) What does BP expect will be the effects of a tropical storm or hurricane on the damage the oil spill will cause to the environment? How could a storm change the impact of oil in the open ocean and the coast?
- 3) What is BP doing to prepare for disruption of oil clean up activities due to the impacts of a storm in the Gulf of Mexico? How could a storm impact the clean up of the oil?
- 4) Does BP have a plan for returning to spill response activities after a tropical storm or hurricane has passed over the spill area? If a hurricane passes over the spill area and spreads oil over large areas of the gulf coast, does BP have a plan for dealing with the combination of oil and general hurricane damage?
- 5) Last week I asked for information regarding the factors that could lead to delay or disruption of the installation of a better fitting cap. Given reports that Hurricane Alex could delay installation of the cap by one week, please indicate the amount of time delay that you would expect to result from a hurricane or tropical storm passing over the accident site.
- 6) Similarly, how would a tropical storm or hurricane affect the drilling of the relief wells? As I understand it, each time a full evacuation of the drilling rigs occurs, 14 days of delay will result. Is this accurate and was this possibility factored into the projected mid-August completion date for the relief wells?

Sincerely,



Edward J. Markey  
Chairman  
Energy and Environment Subcommittee  
Energy and Commerce Committee

CC: Honorable Henry Waxman, Chairman  
Honorable Joe Barton, Ranking Member  
Honorable Fred Upton, Ranking Member

WILMERHALE

The Honorable Edward J. Markey  
 July 21, 2010  
 Page 2

## APPENDIX A:

**RESPONSE TO CHAIRMAN MARKEY'S CORRESPONDENCE, DATED JUNE 30, 2010, TO MR. LAMAR MCKAY, PRESIDENT AND CEO OF BP AMERICA INC.**

1. **What is BP's plan for spill response in the event that a tropical storm or hurricane passes over the overall spill area? Does BP have any such plan or plans for increasing severity of hurricanes? Or does BP plan on simply "playing it by ear" up to the point at which a full evacuation is required and all spill response operations cease?**

BP has always had a hurricane plan in place to manage and protect its operations in the event of severe weather in the Gulf of Mexico, including hurricanes. This plan, called the "Gulf of Mexico Severe Weather Contingency Plan," sets forth procedures for storms, including tropical storms and hurricanes. The Plan remains in effect for all BP's rigs operating in the Gulf of Mexico that are not affected by the *Deepwater Horizon* incident. The Plan has been posted on BP's website at [www.bp.com/severeweatherplans](http://www.bp.com/severeweatherplans).

Following the blowout of the Mississippi Canyon 252 ("MC 252") well, BP and Unified Command worked together to develop a second hurricane response plan that is tailored to the *Deepwater Horizon* incident and that specifically addresses oil spill response and containment activities. This plan, called the "*Deepwater Horizon* Severe Weather Contingency Plan," is comprised of several parts, including the *Deepwater Horizon* Area Severe Weather Contingency Plan, which serves as a guidance document for each of the five Incident Command Posts ("ICPs"), and Severe Weather Contingency Plans pertaining to the (1) Houma, Louisiana ICP, (2) Houston, Texas ICP, (3) New Orleans, Louisiana ICP, (4) Mobile, Alabama ICP, and (5) Miami, Florida ICP.

The main guidance document—the *Deepwater Horizon* Area Severe Weather Contingency Plan—establishes severe weather preparedness and response guidelines for all personnel, equipment, and resources assigned to the *Deepwater Horizon* oil spill response. It provides detailed procedures for an overall severe weather response effort and is the standard to which individuals implementing ICP Plans must adhere when carrying out severe weather response efforts in their assigned areas of operation.

The Unified Command at each ICP, however, retains ultimate responsibility for ensuring the safety of life and property involved in response efforts within each assigned area of operation. Following the Area Severe Weather Plan guidelines, each ICP's Severe Weather Contingency Plan establishes preparedness and response procedures for continuity of operations



WILMERHALE

The Honorable Edward J. Markey  
 July 21, 2010  
 Page 3

in the event of severe weather relocation and ensures the safeguarding of personnel, equipment, and resources assigned to support each ICP.<sup>1</sup>

For instance, because the Houston ICP is responsible for source control and containment operations at the site of the MC 252 well, its Severe Weather Contingency Plan provides guidance for BP's source control representatives to work with Unified Command to protect personnel and prevent pollution in the event of severe weather. Notably, in the event of a tropical storm or hurricane, the Plan provides a timeline for securing personnel and vessels prior to the anticipated arrival of a storm at the MC 252 wellsite, a plan for evacuating and evading a storm, and a schedule for vessel return and resumption of source control operations.

Similarly, the ICP Severe Weather Plan for Houma, Louisiana pertains to the Houma ICP's area of operation; specifically, oil spill response efforts on and off the coast of Louisiana, excluding the area of the MC 252 wellsite and related containment efforts. Its comprehensive Severe Weather Contingency Plan provides a plan for managing response operations in the event of a hurricane, including the roles and responsibilities of various response teams, timelines for suspension and evacuation, and resumption of response operations once the storm has passed. Included with the Plan are checklists, tracking forms, and charts to ensure that each component of the response is acting pursuant to the Plan and in coordination with others.

The *Deepwater Horizon* Severe Weather Contingency Plan has been expanded and improved upon as BP and Unified Command learn more about the oil spill, and as clean-up and containment technology improves. The *Deepwater Horizon* Severe Weather Contingency Plan was most recently updated on July 12, 2010 and is currently in its fourth version. The entire *Deepwater Horizon* Severe Weather Contingency Plan is available on BP's website at [www.bp.com/severeweatherplans](http://www.bp.com/severeweatherplans).

**2. What does BP expect will be the effects of a tropical storm or hurricane on the damage the spill will cause to the environment? How could a storm change the impact of oil in the open ocean and coast?**

According to the National Oceanic and Atmospheric Administration ("NOAA"), a tropical storm or hurricane would have a mixed impact on oil in the Gulf. On the one hand, it would have a positive effect in the open ocean, because "the high winds and seas will mix and

<sup>1</sup> While the description below focuses on the Houston and Houma ICPs, because they are the largest and most relevant to your question, the Miami, Mobile and New Orleans ICPs are similarly focused on ensuring continuity of operations in the event of severe weather and protecting personnel, equipment, and resources assigned to support those ICPs. See generally ICP Miami Severe Weather Contingency Plan, July 12, 2010; ICP Mobile Severe Weather Contingency Plan Annex, July 12, 2010; Unified Area Command New Orleans Severe Weather Contingency Plan Annex, July 12, 2010.

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 July 21, 2010  
 Page 4

'weather' the oil, helping to accelerate the biodegradation process."<sup>2</sup> On the other hand, high winds may also distribute oil over a wider area and carry oil to the coastline, although NOAA explains that "it is difficult to model exactly where the oil may be transported," because "[m]ovement of oil would depend greatly on the track of the hurricane."<sup>3</sup>

**3. What is BP doing to prepare for disruption of oil clean up activities due to the impacts of a storm in the Gulf of Mexico? How could a storm impact the clean up of the oil?**

BP and Unified Command are committed to working diligently to clean up oil coming from the MC 252 well. As described in BP's response to Question One above, BP and Unified Command have worked together to draft a thorough severe weather response plan to ensure the safety of response personnel and provide for a quick return to clean-up operations once a storm has passed. Though a tropical storm would delay clean-up activities for as long as conditions in the region are unsafe, BP and Unified Command will work diligently, pursuant to the *Deepwater Horizon* Severe Weather Contingency Plan, safely to restart response operations as soon as possible.

For additional details, please see the answers to Questions One, Four, and Six, as well as the complete *Deepwater Horizon* Severe Weather Contingency Plan on BP's website.

**4. Does BP have a plan for returning to spill response activities after a tropical storm or hurricane has passed over the spill area? If a hurricane passes over the spill area and spreads over large areas of the gulf coast, does BP have a plan for dealing with the combination of oil and general hurricane damage?**

Because continuity of response operations is second only to personnel safety in the event of severe weather, the *Deepwater Horizon* Severe Weather Contingency Plan, including each corresponding ICP Severe Weather Contingency Plan, directly addresses the resumption of clean-up activities following a storm. The *Deepwater Horizon* Severe Weather Contingency Plan provides that once local authorities give clearance for access to their jurisdictions after a storm, the following assessments will be activated to determine the extent of any storm damage: (1) Shoreline Cleanup Assessment Teams ("SCAT") will perform local shoreline assessments; (2) Rapid Assessment Teams ("RAT") will perform assessments of surge zone areas coordinated with other state, local, and federal assessment teams; and (3) Facility Damage Assessment Teams ("FDAT") will conduct damage assessments of *Deepwater Horizon* response facilities

<sup>2</sup> NOAA's Oil Spill Response: Hurricanes and the Oil Spill, at [http://www.deepwaterhorizonresponse.com/posted/2931/NOAA\\_fact\\_sheet\\_on\\_hurricanes\\_and\\_oil\\_spills.572167.pdf](http://www.deepwaterhorizonresponse.com/posted/2931/NOAA_fact_sheet_on_hurricanes_and_oil_spills.572167.pdf).

<sup>3</sup> NOAA's Oil Spill Response: Hurricanes and the Oil Spill, at [http://www.deepwaterhorizonresponse.com/posted/2931/NOAA\\_fact\\_sheet\\_on\\_hurricanes\\_and\\_oil\\_spills.572167.pdf](http://www.deepwaterhorizonresponse.com/posted/2931/NOAA_fact_sheet_on_hurricanes_and_oil_spills.572167.pdf).

WILMERHALE

The Honorable Edward J. Markey  
 July 21, 2010  
 Page 5

located within the affected area. The ICP Plans further provide specific information about deployment of these and other resources in support of the resumption of operations at each ICP and its branches.

5. **Last week I asked for information regarding the factors that could lead to delay or disruption of the installation of a better fitting cap. Given reports that Hurricane Alex could delay installation of the cap by one week, please indicate the amount of time delay that you would expect to result from a hurricane or tropical storm passing over the accident site.**

Over the past several days, a new, better fitting Lower Marine Riser Package ("LMRP") cap has been installed at the MC 252 wellsite. The decision to install the cap was reached following extensive consultation with Unified Command and government experts to ensure that the cap could be installed safely, quickly, and effectively.

6. **Similarly, how would a tropical storm or hurricane affect the drilling of the relief wells? As I understand it, each time a full evacuation of the drilling rigs occurs, 14 days of delay will result. Is this accurate and was this possibility factored into the projected mid-August completion date for the relief wells?**

As Admiral Allen stated on June 30, 2010, and as set forth in the *Deepwater Horizon* Severe Weather Contingency Plan, in the event that a hurricane is predicted to hit the area surrounding the MC 252 well, it would take approximately fourteen days to evacuate the drilling area, get boats and crew to safety, and then return and reconnect to the well once conditions are safe. The time it takes to decouple, demobilize, and evacuate ships depends on the capabilities of each. Notably, it would take approximately five days for slower ships, such as the *Development Driller II* and *Development Driller III* to prepare to leave the area, twenty-four hours to move away from dangerous seas and, once conditions are safe, approximately the same amount of time to return. BP continues to work on means to shorten the time for withdrawing from the area around the MC 252 well.

Regarding your second question, no one can predict the number or duration of weather-related delays that BP might encounter. BP's estimated completion date for the relief wells attempts to take into account reasonable work stoppages, including those for severe weather, as well as any efficiencies achieved while drilling the relief wells.

WILMERHALE

**BY ELECTRONIC DELIVERY**

July 23, 2010

Honorable Henry A. Waxman  
Committee on Energy and Commerce  
United States House of Representatives  
2125 Rayburn House Office Building  
Washington, D.C. 20515-6115

**Kenneth R. Meade**

+1 202 663 6196(f)  
+1 202 663 6363(f)  
kenneth.meade@wilmerhale.com

**Re: Response to Chairman Waxman's Correspondence Dated June 30, 2010, to Mr.  
Lamar McKay, President and CEO of BP America, Inc.**

Dear Chairman Waxman:

I am writing on behalf of BP America, Inc. (BPA) in response to your June 30, 2010 correspondence to BPA Chairman and President Mr. Lamar McKay, in which you and your colleagues requested responses to certain questions for the record in connection with the U.S. House of Representatives Subcommittee on Energy and Environment's examination of the incident in the Gulf of Mexico involving the Transocean *Deepwater Horizon* oil rig. As part of BPA's commitment to provide responsive information in a timely manner, BPA is providing the following responses to your questions. Please note that these responses reflect the information that BPA was able to collect within a short timeframe, and understanding of these matters may evolve as the company collects additional information.

If you have any questions, or require additional information, please feel free to contact me, or to have your staff contact Liz Reicherts at (202) 457-6585.

Sincerely,



Kenneth R. Meade

cc: The Honorable Joe Barton, Ranking Member

**POST-HEARING QUESTIONS FOR THE RECORD**  
**U.S. HOUSE OF REPRESENTATIVES SUBCOMMITTEE ON ENERGY AND ENVIRONMENT**  
**MR. LAMAR MCKAY, CHAIRMAN AND PRESIDENT, BP AMERICA, INC.**  
**DRILLING DOWN ON AMERICA'S ENERGY FUTURE: SAFETY, SECURITY AND CLEAN ENERGY**  
**HEARING HELD ON JUNE 15, 2010**

ANSWER SET  
JULY 23, 2010

**QUESTIONS FROM THE HONORABLE DIANA DEGETTE**

- 1. Has your company had a blowout on an offshore oil rig that was attributable in whole or in part to faulty cementing?**

Neither BP nor the Bureau of Ocean Energy Management Regulation and Enforcement (BOEMRE) formally classify incidents as "blowouts." However, as required by BOEMRE regulations, BP records and reports "Loss of Well Control" incidents involving offshore oil rigs that are operated by BP in the United States. BOEMRE defines "Loss of Well Control" to include incidents that are sometimes referred to as "blowouts." See 30 C.F.R. § 250.188(a)(3).

Over the ten years before the April 20, 2010 incident on the *Deepwater Horizon*, BP experienced one Loss of Well Control incident involving a BP-operated offshore oil rig in the United States where the incident may have been attributable, in whole or in part, to a micro-annulus created during the surface-casing cementing operations.

- 2. If yes, did the incident(s) occur in the Gulf of Mexico and what were the circumstances?**

The incident referred to above occurred in the Gulf of Mexico on November 14, 2002, on the Diamond Offshore Drilling, Inc., offshore oil rig the *Ocean King*, which was engaged in drilling operations for BP Exploration and Production Inc. at Grand Isle Block 90. This incident involved an unintentional flow of gas and fluid and, after gas was detected on the rig, all personnel were evacuated from the rig and platform. After personnel re-boarded the rig on November 16, 2002, contained the leaking seal elements, and initiated temporary abandonment procedures, normal drilling operations resumed on November 22, 2002. An investigation later concluded that the loss of control may have been caused by a micro-annulus created during surface-casing operations. This incident did not cause any injuries to personnel on the rig or any physical damage to the rig itself.

- 3. Under what circumstances does your company currently perform cement bond log tests at offshore drilling wells in the Gulf of Mexico?**

Cement bond log testing is not required for temporary abandonment of a well except as provided by 30 C.F.R. § 250.428. Pursuant to § 250.428, if there is an indication of an inadequate cement job (such as lost returns, cement channeling, or a failure of equipment), then a lessee must take further steps to analyze the cement job, including running a cement bond log test, pressure testing the casing shoe, running a temperature survey, or using a combination of

those three techniques. However, across the Gulf of Mexico, BP routinely runs cement bond logs when it prepares to place wells into production.

**4. Would you support a requirement to perform cement bond log tests at each offshore well?**

BP is committed to ensuring the prevention of another catastrophic loss of well control event. The cause of the April 20 incident is the subject of BP's ongoing, non-privileged, internal investigation. Because this and other investigations of the incident are ongoing, it is premature to draw any conclusions about the causes and the possible effect that a cement bond log test would have had. At this time, BP has no position regarding a requirement to perform cement bond log testing. BP expects that these investigations may be instructive concerning appropriate testing and evaluations to be conducted during drilling. The lessons learned will be incorporated into future planning, training, and execution.

**5. Would you support a requirement that the ingredients in dispersants be made public?**

BP recognizes the importance of access to information regarding the constituents of dispersants in the context of safety and environmental testing. BP supports the disclosure, in the National Contingency Plan Product Schedule, of the constituents of dispersants for which the manufacturer has not made a valid Confidential Business Information claim. When necessary to review or test proprietary constituents of dispersants, BP is in favor of an approach that allows the necessary parties to review the constituent data confidentially, thereby protecting the manufacturers' trade secrets.

**6. Would you support a requirement to disclose the ingredients, but not the proprietary chemical formula, used in hydraulic fracturing of oil and gas wells?**

BP believes that federal and state governments and the oil and gas industry should continue to ensure that hydraulic fracturing operations are regulated and managed in a way that protects public health and the environment. Specifically, BP supports disclosure of the contents of hydraulic fracturing fluids. BP believes such disclosure is best achieved through state regulation that adopts hydraulic fracturing chemical disclosure standards that provide transparency to health professionals and state agencies when necessary to protect public health and the environment while maintaining the confidentiality of manufacturer trade secret information.

HENRY A. WAXMAN, CALIFORNIA  
CHAIRMAN

JOE BARTON, TEXAS  
RANKING MEMBER

ONE HUNDRED ELEVENTH CONGRESS  
**Congress of the United States**  
**House of Representatives**  
COMMITTEE ON ENERGY AND COMMERCE  
2125 RAYBURN HOUSE OFFICE BUILDING  
WASHINGTON, DC 20515-6115

Majority (202) 225-2927  
Minority (202) 225-3841

July 1, 2010

Administrator Martha Johnson  
U.S. General Services Administration  
1800 F Street NW  
Washington, DC 20405-0001

Dear Administrator Johnson:

Today, the New York *Times*<sup>1</sup> reported that hundreds of formaldehyde-contaminated trailers that were previously provided by the Federal Emergency Management Agency (FEMA) to victims of Hurricane Katrina and Rita are now being repurposed as living quarters for workers involved in clean up efforts of the BP deepwater Horizon Oil spill.

These trailers were first procured by FEMA in summer 2005 to shelter and house displaced residents from the severe hurricanes that affected thousands of residents of the Gulf States. In 2006, claims arose that units were contaminated with high levels of formaldehyde, which posed a particular problem for the 'travel trailers' which are equipped with less capable ventilation systems than mobile home trailers. Formaldehyde, which was used as a component of the pressed wood in the construction of the trailers, is highly toxic when inhaled and is a known carcinogen. Despite the fact that these travel trailers are designed only as temporary living quarters and for recreational purposes, many displaced residents were using these trailers as long term shelter and as a consequence, were highly exposed to the toxic formaldehyde fumes.

After numerous reports of serious health concerns for those residing in these trailers and after federal substantiation of these claims by the Agency for Toxic Substances and Disease Registry (ATSDR), FEMA halted distribution of the remaining unused units.

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<sup>1</sup> <http://www.nytimes.com/2010/07/01/us/01trailers.html?hp>

Earlier this year, in an attempt to recoup taxpayer funds, FEMA, working with the General Services Administration (GSA), sold over 100,000 trailers through the public auction process. Many of these trailers were sold to companies and individuals located in Louisiana and other Gulf states.

It is our understanding that as part of the sale of these trailers, GSA took steps to educate and inform potential buyers and users about the contamination of the trailers with hazardous formaldehyde and required all buyers to sign contracts that the trailers would not be used as housing. Despite these safeguards, according to the *New York Times* article<sup>2</sup>, dozens of the trailers have been sold or otherwise provided to unwitting workers who are flocking to the Gulf to fill the jobs being offered by disaster relief firms. We are concerned that workers who are being exposed to toxic oil fumes during their cleanup efforts are now returning after a long day of work to sleep in a toxic, formaldehyde contaminated trailer.

We therefore ask that you respond to the following requests for information.

1. Please provide the Subcommittee with documentation regarding all sales of the formaldehyde-contaminated trailers. In each case, were all of the trailers sold in compliance with GSA's requirement (1) that the purchaser sign an agreement that the trailer would not be used for housing, (2) that the trailers clearly display a label reading "Not to be used as housing", and (3) that the purchaser read documentation about the impacts of formaldehyde exposure?
2. Has GSA found any auctioned trailers that were purchased without the required signed agreement?
3. Has GSA discovered any of these auctioned trailers in which owners have failed to label the trailer as being unfit for habitation or have removed the required labeling?
4. How is GSA ensuring that secondary sales of these auctioned trailers are conforming to the original GSA requirements?
5. Has GSA determined if these trailers are indeed being used as temporary housing facilities as has been reported in the *New York Times* Article? If so, what is GSA going to do to protect the health and wellbeing of workers who are responding to the BP oil spill in the Gulf of Mexico? If GSA is making no such efforts, why not?

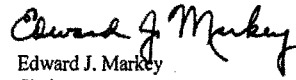
Thank you for your assistance and cooperation in responding to this request. Should you have any questions, please have your staff contact Dr. Michal Freedhoff of the Subcommittee staff, or Dr. Avenel Joseph of Mr. Markey's staff at 202-225-2836 or Chris DeBosier of Mr. Melancon's staff at 202-225-4031.

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<sup>2</sup> <http://www.nytimes.com/2010/07/01/us/01trailers.html?hp>



Sincerely,



Edward J. Markey  
Chairman  
Energy and Environment Subcommittee



Charlie Melancon  
Member  
Energy and Environment Subcommittee

CC: Honorable Henry Waxman, Chairman  
Honorable Joe Barton, Ranking Member  
Honorable Fred Upton, Ranking Member

HENRY A. WAXMAN, CALIFORNIA  
CHAIRMAN

JOE BARTON, TEXAS  
RANKING MEMBER

ONE HUNDRED ELEVENTH CONGRESS  
**Congress of the United States**  
**House of Representatives**  
COMMITTEE ON ENERGY AND COMMERCE  
2125 RAYBURN HOUSE OFFICE BUILDING  
WASHINGTON, DC 20515-6115

Majority (202) 225-2927  
Minority (202) 225-3841

July 2, 2010

Jon Leibowitz  
Chairman  
Federal Trade Commission  
600 Pennsylvania Avenue, NW  
Washington, DC 20580

Dear Chairman Leibowitz:

Yesterday, the *New York Times*<sup>1</sup> reported that hundreds of formaldehyde-contaminated trailers that were previously provided by the Federal Emergency Management Agency (FEMA) to victims of Hurricane Katrina and Rita are now being repurposed as living quarters for workers involved in clean up efforts of the BP deepwater Horizon Oil spill.

These trailers were first procured by FEMA in summer 2005 to shelter and house displaced residents from the severe hurricanes that affected thousands of residents of the Gulf States. In 2006, claims arose that units were contaminated with high levels of formaldehyde, which posed a particular problem for the 'travel trailers' which are equipped with less capable ventilation systems than mobile home trailers. Formaldehyde, which was used as a component of the pressed wood in the construction of the trailers, is highly toxic when inhaled and is a known carcinogen. Despite the fact that these travel trailers are designed only as temporary living quarters and for recreational purposes, many displaced residents were using these trailers as long term shelter and as a consequence, were highly exposed to the toxic formaldehyde fumes.

After numerous reports of serious health concerns for those residing in these trailers and after federal substantiation of these claims by the Agency for Toxic Substances and Disease Registry (ATSDR), FEMA halted distribution of the remaining unused units.

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<sup>1</sup> <http://www.nytimes.com/2010/07/01/us/01trailers.html?hp>

Earlier this year, in an attempt to recoup taxpayer funds, FEMA, working with the General Services Administration (GSA), sold over 100,000 trailers through the public auction process. Many of these trailers were sold to companies and individuals located in Louisiana and other Gulf states.

It is our understanding that as a requirement for sale of these trailers, GSA took steps to educate and inform potential buyers and users about the contamination of the trailers with hazardous formaldehyde and required (1) that the purchaser sign an agreement that the trailer would not be used for housing, (2) that the trailers clearly display a label reading "Not to be used as housing", and (3) that the purchaser read documentation about the impacts of formaldehyde exposure. Despite these safeguards, according to the *New York Times* article<sup>2</sup>, dozens of the trailers have been sold or otherwise provided to unwitting workers who are flocking to the Gulf to fill the jobs being offered by disaster relief firms. The article also notes that in several cases original purchasers have resold these trailers or provided these trailers to workers without the required placards on the outside or inside indicating the formaldehyde risk or that the trailers was not supposed to be used for housing.

Selling a trailer that is not fit for occupancy for housing purposes is not only dishonest, but would also likely be a deceptive trade practice governed under Section 5 of the Federal Trade Commission Act (FTCA). We therefore request that you respond to the following questions by close of business on July 19, 2010.

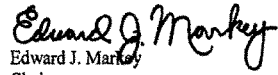
1. Does the FTC believe that reselling formaldehyde-contaminated trailers without proper labeling or education about the risks associated with using such trailers for housing may constitute a violation of Section 5 of the FTCA, which outlaws unfair or deceptive trade practices?
2. If the Commission does believe that such trade practices may constitute potential violations of the Act, what actions, if any, is the FTC taking in response to this matter?
3. If any violation of Section 5 of the FTC Act did occur in connection with such sales, what remedies would be available to those who purchased such trailers? Would they, for example, be able to rescind the purchase and get their money back? What other remedies would be available to the purchasers?
4. What penalties would be applicable to the sellers of these toxic trailers?

Thank you for your assistance and cooperation in responding to this request. Should you have any questions, please have your staff contact Dr. Michal Freedhoff of the Subcommittee staff or Dr. Avenel Joseph of Rep. Markey's staff at 202-225-2836, and Mr. Chris DeBosier of Rep. Melancon's office at 202-225-4031

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<sup>2</sup> <http://www.nytimes.com/2010/07/01/us/01trailers.html?hp>

Sincerely,



Edward J. Markey  
Chairman  
Subcommittee on Energy and Environment



Charlie Melancon  
Member  
Subcommittee on Energy and the Environment

CC: Honorable Henry Waxman, Chairman  
Honorable Joe Barton, Ranking Member  
Honorable Fred Upton, Ranking Member



THE CHAIRMAN

FEDERAL TRADE COMMISSION  
WASHINGTON, D.C. 20580

July 29, 2010

The Honorable Edward Markey  
Chairman  
Subcommittee on Energy and Environment  
United States House of Representatives  
Washington, D.C. 20515

Dear Chairman Markey:

Thank you for your recent letter communicating concerns about a report that formaldehyde-contaminated trailers previously provided by the Federal Emergency Management Agency (FEMA) to hurricane victims have been repurposed as living quarters for workers involved in the BP deepwater Horizon clean up. In particular, your letter indicates that FEMA, working with the General Services Administration (GSA), sold over 100,000 trailers through a public auction process. You indicate that as a prerequisite for sale of these trailers, GSA required that purchasers sign an agreement that the trailer would not be used for housing, that the purchasers post labels on the trailers stating "Not to be used for housing," and that the purchaser read documentation about the impacts of formaldehyde exposure. Despite these safeguards, a recent news article indicates that the purchasers have resold some of these trailers to workers without the required placards.

Based on these facts, you asked: 1) whether the resale of these trailers as housing constitutes a violation of Section 5 of the FTC Act; 2) if so, what actions, if any, the FTC is taking in response to this matter; 3) what remedies would be available under the FTC Act to those who purchase such trailers; and 4) what penalties would be applicable to the resellers.

The Commission has been directed by Congress to act in the interest of all consumers to prevent deceptive or unfair acts or practices in commerce, pursuant to the Federal Trade Commission Act, 15 U.S.C. §§ 41-58. In interpreting Section 5 of that statute, 15 U.S.C. § 45, the Commission has determined that a representation, omission, or practice is deceptive if it is likely to mislead consumers acting reasonably

The Honorable Edward Markey – Page 2

under the circumstances; and if it is material, that is, likely to affect consumers' conduct or decisions with respect to the product at issue.<sup>1</sup> Section 5 of the FTC Act also provides that an act or practice is unfair if it causes or is likely to cause substantial injury that is not outweighed by countervailing benefits to consumers or to competition; and it is not reasonably avoidable by consumers themselves.<sup>2</sup>

In this particular case, the resellers may have engaged in unfair practices under Section 5 of the FTC Act if they failed to disclose the formaldehyde risk to purchasers.<sup>3</sup> It also is possible that they engaged in deceptive practices under the FTC Act if they implied or stated that the structures were appropriate for housing. However, any definitive conclusion would require further investigation. If the sale of these trailers constitutes violations of Section 5 of the FTC Act, the Commission may seek a variety of remedies including equitable monetary relief, cease and desist orders, bans, and disclosure remedies. Civil penalties, however, would not be available. The remedy pursued would depend on the facts of the particular case.<sup>4</sup>

In determining whether to take enforcement or other action, however, the Commission considers a number of facts, including the type of violation alleged; the nature and amount of consumer injury at issue; the number of consumers affected; the likelihood of preventing future unlawful conduct and securing redress or other relief; and whether another agency is better situated to address the problem.

In this instance, the FEMA trailers were sold through actions conducted by GSA. At an April 28 hearing before the Subcommittee on Commerce, Trade and Consumer Protection, Steven Kempf, Acting Commissioner of GSA's Federal Acquisition Service,

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<sup>1</sup> *Novartis Corp.*, 127 F.T.C. 580, 679 (1999), *aff'd and enforced*, 223 F.3d 783 (D.C. Cir. 2000); *Stouffer Foods Corp.*, 118 F.T.C. 746, 798 (1994); *Kraft, Inc.*, 114 F.T.C. 40, 120 (1991), *aff'd and enforced*, 970 F.2d 311 (7th Cir. 1992); *Removatron Int'l Corp.*, 111 F.T.C. 206, 308-09 (1988); *International Harvester Co.*, 104 F.T.C. 949, 1056 (1984); *Cliffdale Assocs.*, 103 F.T.C. 110, 164-65 (1984). See also generally *Federal Trade Commission Policy Statement on Deception*, appended to *Cliffdale Assocs.*, 103 F.T.C. at 174-83.

<sup>2</sup> Section 5(n) of the FTC Act, 15 U.S.C. § 45(n). The Commission previously relied on similar criteria to define the scope of its authority to prohibit unfair acts or practices pursuant to Section 5(a) of the FTC Act. See, e.g., *Orkin Exterminating Co.*, 108 F.T.C. 263, 362 (1986); *International Harvester Co.*, 104 F.T.C. at 1061. See also generally *Federal Trade Commission Policy Statement on Unfairness*, appended to *International Harvester Co.*, 104 F.T.C. at 1070-76.

<sup>3</sup> Under the FTC Act, "Practices that have been found misleading or deceptive in specific cases include . . . sales of hazardous or systematically defective products or services without adequate disclosures." *Federal Trade Commission Policy Statement on Deception*, appended to *Cliffdale Assocs.*, 103 F.T.C. 110, 174 (1984).

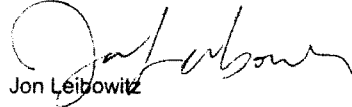
<sup>4</sup> See 15 U.S.C. §§ 53 & 57b; *FTC v. H.N. Singer, Inc.*, 668 F.2d 1107 (9th Cir. 1982).

The Honorable Edward Markey – Page 3

stated that after learning of the formaldehyde levels, GSA in consultation with FEMA developed a certification statement to inform purchasers at the auctions of the potential formaldehyde levels, restrictions on the use of the trailers as housing, and the requirement that the purchaser pass along this information to a subsequent buyers of a trailer.<sup>5</sup> At the same hearing, Acting Commissioner Kempf testified that violation of the certification statement and restrictions is subject to criminal penalties under federal law. He also testified that on March 2, 2010, GSA sent an email to purchasers of the trailers reminding them of the certification requirement and stating that potential violations would be investigated by to the GSA's Office of Inspector General. Finally, in response to questions from members, Acting Commissioner Kempf testified that the Inspector General could refer violations to the U.S. Attorney for prosecution. In light of GSA's ongoing efforts to address the potential criminal violations that have occurred in connection with reported resale and reuse of these trailers, it appears that a criminal action would likely yield the strongest remedy for consumers. However, FTC staff will continue to monitor the situation.

Thank you again for your letter. If you or your staff have any additional questions or comments or wish to share additional information, please feel free to contact me or have your staff contact Jeanne Bumpus, Director of our Office of Congressional Relations, at (202) 326-2946.

Very truly yours,



Jon Leibowitz

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<sup>5</sup> Statement of Steven Kempf, Acting Commissioner, Federal Acquisition Service, U.S. General Services Administration, before the Subcommittee on Commerce, Trade and Consumer Protection of the Committee on Energy and Commerce, US House of Representatives, April 28, 2010.

HENRY A. WAXMAN, CALIFORNIA  
CHAIRMAN

JOE BARTON, TEXAS  
RANKING MEMBER

ONE HUNDRED ELEVENTH CONGRESS  
**Congress of the United States**  
**House of Representatives**  
COMMITTEE ON ENERGY AND COMMERCE  
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WASHINGTON, DC 20515-6115

Majority (202) 225-2927  
Minority (202) 225-3641

July 8, 2010

Mr. Lamar McKay  
President and CEO  
BP America, Inc.  
501 Westlake Park Boulevard  
Houston, Texas, 70779

Dear Mr. McKay:

I write to request additional information regarding BP's exploration plans for the relief wells. Your July 2<sup>nd</sup> response to my letter of June 23<sup>rd</sup> provided the exploration plan for the relief wells and revisions to it. These documents, along with the exploration plan for the original well and the regional spill response plan, raise further questions.

As you know in the March 2009 Initial Exploration Plan<sup>1</sup> for the Macondo well, BP was required to provide information to the Mineral Management Service on a variety of issues including potential oil spills and their impact on the wildlife, their habitat and the resources in the Gulf of Mexico. Since the well was being drilled in the central planning region of the Gulf, a site specific oil spill response plan was not required; instead all activities and facilities were covered by BP's Gulf of Mexico Regional Oil Spill Response Plan.<sup>2</sup> The exploration plan did have to indicate deviations from the regional plan. One such deviation was in the worst-case scenario determination, which the original Macondo plan indicated would be 162,000 barrels per day (bpd). The initial April 24<sup>th</sup>, 2010 relief wells exploration plan also included the 162,000 bpd worst-case scenario. The relief well plan was amended on April 27<sup>th</sup>, 2010,

<sup>1</sup> BP's Initial Exploration Plan, March 2009, available at:  
<http://www.gomr.mms.gov/PI/PDFImages/PLANS/29/29977.pdf>

<sup>2</sup> BP's Gulf of Mexico Regional Oil Spill Response Plan, June 2009, available at:  
[http://docs.house.gov/energycommerce/Docs\\_06152010/BP.Oil.Spill.Response.Plan.pdf](http://docs.house.gov/energycommerce/Docs_06152010/BP.Oil.Spill.Response.Plan.pdf)



Mr. McKay  
Page 2 of 3

and the worst-case scenario was increased to 240,000 bpd, just 10,000 bpd below the regional response plan's scenario of 250,000 bpd.<sup>3</sup>

Please answer the following questions that arise from examination of your regional response plan and the exploration plans submitted for the original well and relief wells:

1. Since the start of the drilling of the relief wells, BP officials have indicated that they would be finished in August. Today the *Wall Street Journal* reports that BP official Bob Dudley says the relief wells could be finished as early as July 27<sup>th</sup>. In the relief wells exploration plan, BP indicates a finish date for the relief wells of July 15<sup>th</sup>. Please explain the discrepancy between BP's public statements and what was submitted to the Minerals Management Service.
2. Please explain the April 27<sup>th</sup> change raising the relief well worst-case scenario from 162,000 bpd to 240,000 bpd. How has the flow from the now blown-out original well influenced the revision of this number? Please provide all documents relating to the change in the worst-case scenario.
3. The revised worst-case scenario is now just 10,000 bpd less than the 250,000 bpd worst-case scenario in the regional response plan. What differences exist between the relief wells and the regional response plan well (MC 462) that account for this difference? Please provide all documents relating to these scenarios.
4. The original well exploration plan relied on a regional response plan approved in November 2008 in which the worst-case scenario was 300,000 bpd. The subsequent regional response plan approved in July 2009 lowered that number to 250,000 bpd. Please explain this change and provide all documents relating to the change.
5. The environmental impact analysis in the relief wells exploration plan is essentially the same as that in the original exploration plan. For example, both plans section 14.2.3.1 Beaches begin with the statement:

An accidental oil spill from the proposed activities could cause impacts to beaches. However, due to the distance to shore (48 miles) and the response capabilities that would be implemented, no significant adverse impacts are expected.

This is clearly not the experience in the aftermath of the original Macondo well blowout. Why have you used the same language for the impact of a spill from the relief wells despite the experience of the spill from the original well? What is the basis for BP's stated belief that an accidental oil spill from the relief well

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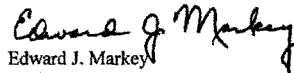
<sup>3</sup> BP's Supplemental Exploration Plan and revisions (for relief wells), April 2010, available at: <http://www.gomr.mms.gov/PI/PDFImages/PLANS/30/30979.pdf>

Mr. McKay  
Page 3 of 3

would not result in significant adverse impacts to beaches, when it is abundantly clear that the spill from the original Macondo well has in fact resulted in significant adverse impacts to shorelines, notwithstanding the 48 mile distance from the well to the shoreline?

Thank you very much for your attention to this important matter. Please provide your response no later than Wednesday July 14, 2010. If you have any questions or concerns, please have your staff contact Dr. Michal Freedhoff of the Energy and Environment Subcommittee staff at 202-225-2836.

Sincerely,



Edward J. Markey  
Chairman  
Energy and Environment Subcommittee

cc: Honorable Henry Waxman, Chairman  
Honorable Joe Barton, Ranking Member  
Honorable Fred Upton, Ranking Member

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ONE HUNDRED ELEVENTH CONGRESS

## Congress of the United States

### House of Representatives

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 ROBERT E. LATTI, OHIO

July 13, 2010

Mr. Tony Hayward  
 Chief Executive Officer  
 BP PLC  
 1 St. James's Square  
 London SW1 Y 4PD  
 United Kingdom

Dear Mr. Hayward:

On June 23, 2010, I wrote to you specifically "requesting information relating to the integrity of the wellbore and casing of the Deepwater Horizon leak site." As I mentioned in that letter, which is attached, there has been speculation that the casing and wellbore may have been damaged and that leaks of oil may be coming up through the seafloor or through the pipe itself.

In fact, on June 17, 2010, Admiral Thad Allen noted that "we don't know if the wellbore has been compromised or not. One of the reasons we did not continue with top kill at higher pressures, there was a concern that if we increased the pressure too hard we might do damage to the casings and the wellbore. What we didn't want was open communication of any oil from the reservoir outside the wellbore that might get into the formation and work its way to the subsea floor and then result in uncontrolled discharge at that point."

BP has now installed the three ram capping stack on the Deepwater Horizon Lower Marine Riser Package. BP now plans on closing the vents on this capping stack and conducting pressure testing to determine if the well can safely be shut in. Pressure

readings will be used to determine if sufficient well integrity exists and a determination will be made whether it is safe to completely shut in the well or whether additional oil collection should continue in order to relieve pressure on the well.

Question 3 of my June 23<sup>rd</sup> letter asked BP for information needed to better understand what is known about the condition of the wellbore and about reports of sea floor leaks. It asks the following:

“Please provide documents related to the condition of the wellbore.

- a. Has BP attempted to determine whether the casing inside the wellbore has been damaged and if so, what were the results? Please provide all measurements, images, and other documents related to the condition of the wellbore, as well as any future plans for such measurements going forward.
- b. Has BP confirmed or attempted to confirm the presence of hydrocarbons leaking from anywhere other than the containment cap? If so, what were the results? Please provide all related documents.
- c. Has BP surveyed the vicinity of the well to look for any leaks from the sea floor? If so, what area was surveyed? Please provide all measurements, images, and other documents related to any survey(s) to identify hydrocarbon leakage from the sea floor. If no survey has been performed, why not?”

On July 2, 2010, attorneys for BP responded in part to my letter, however BP did not in any way respond to Question 3 as quoted above. My staff followed up on this issue with your representatives during the first week of July (as acknowledged in a response from David Merlot of the law firm of WilmerHale dated July 9, 2010). Still, no information regarding these fundamental questions of well integrity has yet been provided to me or the Committee.

I am writing to reiterate the importance of providing the Subcommittee and the public with this information immediately. The Committee understands that BP is focused on capping the well and preventing the further flow of oil and gas into the Gulf of Mexico. Nevertheless, the discharge of those responsibilities does not obviate the need for BP to promptly comply with requests for information by the Congress. That is particularly the case when the information in question is well-known to BP and has in all likelihood already been shared with executive branch agencies. A delay of more than three weeks regarding this crucial information and during this critical time period is simply not acceptable.

Since my staff requested from BP staff further information on these questions last Wednesday, I therefore request that you provide your response within the next 48 hours.

In addition, I expect that BP will provide full answers to all the questions in my original letter in a timely manner. If you have any questions or concerns, please have

your staff contact Dr. Michal Freedhoff of the Energy and Environment Subcommittee staff at 202-225-2836.

Sincerely,

A handwritten signature in black ink, reading "Edward J. Markey". The signature is fluid and cursive, with the first name "Edward" and last name "Markey" clearly legible.

Edward J. Markey  
Chairman  
Energy and Environment Subcommittee

cc: Honorable Henry Waxman, Chairman  
Honorable Joe Barton, Ranking Member  
Honorable Fred Upton, Ranking Member

WILMERHALE

David S. Molot

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david.molot@wilmerhale.com

July 15, 2010

The Honorable Edward J. Markey, Chairman  
Subcommittee on Energy and Environment  
Committee on Energy and Commerce  
United States House of Representatives  
2125 Rayburn House Office Building  
Washington, DC 20515-6115

Re: Response to Chairman Markey's Correspondence Dated July 13, 2010, to Dr. Tony  
Hayward, Chief Executive Officer of BP plc

Dear Chairman Markey:

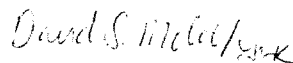
I am writing on behalf of BP in response to your July 13, 2010 letter to Dr. Tony Hayward, Chief Executive Officer of BP p.l.c., in which you ask BP to provide information concerning the condition of the MC252-1 wellbore within 48 hours.

As BP has made clear through responses to you in previous letters, BP is committed to cooperating with your inquiries. Accordingly, although BP is not able to provide a full response at this time, we are providing today documents and information that are responsive to your request. Specifically, BP is providing information in the attached Appendix A and is producing with this letter 10 DVDs that have been Bates labeled BP-HZN-CEC079795 to BP-HZN-CEC079804.

Today's production contains confidential and proprietary business information. BP respectfully requests that these documents be maintained confidentially and that, if the Committee or Subcommittee is considering releasing any of these documents, BP be given an opportunity to be heard on that question.

If you have any questions, or require additional information, please feel free to contact me or to have your staff contact Liz Reicherts at (202) 457-6585.

Sincerely,



David S. Molot

WILMERHALE

July 15, 2010  
Page 2

Enclosure

cc: Hon. Henry Waxman, Chairman  
Hon. Joe Barton, Ranking Member  
Hon. Fred Upton, Ranking Member

July 15, 2010  
Page 3

#### Appendix A

##### RESPONSE TO CHAIRMAN MARKEY'S CORRESPONDENCE, DATED JULY 13, 2010, TO DR. TONY HAYWARD, CHIEF EXECUTIVE OFFICER OF BP PLC

- **Question 3: Please provide documents related to the condition of the wellbore.**

BP appreciates your acknowledgment, as noted in your prior letters to BP, that you do not wish "to interfere with or delay any efforts to eliminate or limit the flow of oil." Because this request is directed to ongoing, mission-critical operations in the Unified Command's efforts to respond to the incident, including the currently ongoing well integrity test, a full and complete response would require retrieval of information and documents directly from BP personnel who are actively involved in essential, around-the-clock response operations. BP appreciates your understanding that such an effort risks disruption of, or delay to, the response efforts.

On July 7 and July 13, 2010, BP discussed with your staff the implications for the response operations of an extensive search for documents and information responsive to this request. We understand as a result of these discussions that you would appreciate receiving any information that we can produce at this time regarding the current condition of the wellbore and/or the surrounding sea floor. In the spirit of cooperation, we are thus providing the below responses and the enclosed DVDs containing geological and geophysical data. Moreover, as you may know, and as discussed further below, BP is currently conducting a "well integrity test" at the direction of Unified Command. This test will provide additional data about the condition of the MC252-1 well. BP will provide you data about that test soon after the test is complete.

- **Question 3(a): Has BP attempted to determine whether the casing inside the wellbore has been damaged and if so, what were the results? Please provide all measurements, images, and other documents related to the condition of the wellbore, as well as any future plans for such measurements going forward.**

To date it has not been possible to determine the precise condition of the MC252-1 wellbore underneath the sea floor. Thus, as explained by BP Senior Vice President Kent Wells on July 14, 2010, no one knows for certain whether the casing has been damaged. For that reason, Unified Command, government scientists led by Secretary of Energy Steven Chu, and BP are conducting a well integrity test that will provide additional evidence about the condition of the wellbore. That test is ongoing at this time. It is expected to continue in six hour increments, for up to forty-eight hours total.

Over the last several weeks, Unified Command and BP—together with representatives of the Department of Interior, Department of Energy, U.S. Geological Service, Los Alamos National Laboratory, Sandia National Laboratories and Lawrence Livermore National Laboratory—have been engaged in rigorous scientific and engineering discussions about



July 15, 2010  
Page 4

ongoing response operations in the Gulf of Mexico, including the integrity of the wellbore and its impact on forward operations conducted at the direction of Unified Command. These discussions have included review of the drilling history and related data for the *Deepwater Horizon* as well as for the relief wells (including geophysical and geological data collected prior to April 20, 2010); data concerning the "top kill" operation; pressure data from the MC252-1 wellhead; visual observations of the area around the wellhead; and the fact that, to date, there has been no evidence that hydrocarbons have leaked into the sea from any source except the MC252-1 wellhead. The discussions have addressed various possible scenarios about the condition of the wellbore, including the possibility that the casing has been damaged.

In the interests of providing responsive documents, we are producing with this letter ten DVDs containing geophysical and geological data collected prior to the incident on April 20, 2010. Specifically, these DVDs contain seismic data, mud logging data, logging while drilling records, downhole pressure test data, and wireline logs from the MC252-1 well.

- **Question 3(b): Has BP confirmed or attempted to confirm the presence of hydrocarbons leaking from anywhere other than the containment cap? If so, what were the results? Please provide all related documents.**

On July 13, 2010, BP conducted a seismic survey of the area at the direction of Unified Command. BP also conducted a seismic survey in the days following the April 20, 2010 incident on the *Deepwater Horizon* and is continuously monitoring the status of the relief wells. Finally, through cameras and sonar positioning on Remotely Operated Vehicles (ROVs) operating around the MC252 site, Unified Command and BP have been observing the sea floor environment surrounding the relief wells. Neither the above-referenced surveys nor the visual observations has revealed any evidence that hydrocarbons have been leaking into the sea from anywhere except the MC252-1 wellhead itself.

As noted in our letter dated July 2, 2010, we cannot at this time provide a complete response to your above questions without interrupting critical response operations including the active well integrity test.

- **Question 3(c): Has BP surveyed the vicinity of the well to look for any leaks from the sea floor? If so, what area was surveyed? Please provide all measurements, images, and other documents related to any survey(s) to identify hydrocarbon leakage from the sea floor. If no survey has been performed, why not?"**

Please see the above response to Question 3(b).

COMMITTEES  
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EDWARD J. MARKEY  
7TH DISTRICT, MASSACHUSETTS

**Congress of the United States**  
**House of Representatives**  
**Washington, DC 20515-2107**

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<http://markey.house.gov>

July 13, 2010

The Honorable Margaret Hamburg, M.D.  
Commissioner  
U.S. Food and Drug Administration  
10903 New Hampshire Ave.  
Silver Spring, MD 20993

Dear Dr. Hamburg:

On May 25, 2010 I wrote you to request information relating to the potential impacts on seafood from the prolonged use of chemical dispersants following the explosion aboard the BP Deepwater Horizon drilling rig. Although I have yet to receive any response to my letter, new developments that seem to indicate that the marine food chain in the Gulf of Mexico has already been contaminated by oil and arsenic raise new questions about the impact that this catastrophic oil disaster will have on marine life in the Gulf waters.

Currently, over 84,000 square miles, corresponding to approximately 35% of the Gulf's fishing area, is closed to fishing activities. While these immediate closures ensure the safety of seafood in the near term, the FDA must ensure that as the disaster and mitigating efforts continue to unfold over the next few months, decisions to open the closed waters to fishing activities are done in a safe manner that protects public health in the long term and helps the Gulf's fishing industry recover.

Recently, researchers uncovered droplets of oil found inside crab larvae harvested from the Gulf of Mexico<sup>1</sup>. This finding is particularly disconcerting because these larvae are a source of food for numerous aquatic species and this is therefore the first sign that hydrocarbons have entered into the food web. Sampling studies have identified hydrocarbons in several types of crab larvae recovered from sites near Pensacola, Florida, Galveston, Texas and Grand Isle Louisiana, highlighting the widespread scope of the contamination. In some areas, 100% of the larvae recovered contain droplets of oil hydrocarbons, a major concern given that crab is a favorite food for both humans and multiple fish species that live in the marshes. What this means is that despite fishery closures in areas that are known to be contaminated by oil,

<sup>1</sup> <http://www.sunherald.com/2010/07/01/2303319/usm-tulane-scientists-say-oil.html>

Dr. Hamburg  
Page 2 of 3

contamination could still be spreading into the human food chain as predators eat oil-tainted species, and then travel to areas that are not themselves closed to fishing.

In addition to direct contamination with hydrocarbons, recent research highlights the potential for seafood to be contaminated with high levels of arsenic found in oil.<sup>2</sup> While arsenic is naturally present in seawater, under normal circumstances minerals located on the ocean floor magnetically attract the poison and bury it under layers of sand, silt and sediment. However, in addition to increasing the amounts of arsenic found in seawater, a recent report suggests that oil from this leak creates a barrier between the sediment and arsenic, weakening the magnetic attraction between them and preventing the arsenic from being buried as usual.<sup>3</sup> Thus the effect of the oil is two-fold, increasing the amount of arsenic present and clogging the natural mechanism the ocean uses to filter out the toxic compound.

As you know, arsenic is highly toxic, and chronic exposure to the poison will result in damage to the kidneys, heart, brain or even death. Additionally, arsenic bioaccumulates in the tissues of aquatic organisms, which is of grave concern if arsenic were to enter into the food chain and accumulate in aquatic organisms that humans use as a source of food. Unfortunately, the presence of arsenic in seafood may not be as easily detected as the presence of hydrocarbons, underscoring the necessity to vigilantly monitor the impacts that this oil leak may have on human health. Furthermore, I am concerned that the mixture of oil, dispersants, arsenic and other toxic compounds are having effects on seafood that may not be detectable for months.

I therefore request that you provide a full and complete response to the questions posed in my letter of May 25, 2010 by the close of business on Friday, July 16, 2010. If you are unable to comply with this request, I ask that you provide a letter setting forth the reasons for your failure to provide a response to this inquiry in a timely fashion, and also setting a date upon which such a response will be submitted. In addition, I request that you also provide a full and complete response to the following questions by no later than the close of business on July 28, 2010:

1. What is FDA doing to assess whether the ingestion of contaminated species by other more mobile fish is not resulting in the contamination of marine seafood caught outside the areas closed to fishing?
2. While FDA's webpage<sup>4</sup> states that "FDA and NOAA have agreed on a protocol to determine when closed federal harvest waters can be re-opened." The protocol relies heavily on the ability to pass a sensory and chemical analysis to identify oil and its residues. Does this protocol also identify when seafood is contaminated with arsenic? If

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<sup>2</sup> <http://www.businessweek.com/news/2010-07-02/oil-spills-raise-ocean-s-arsenic-level-create-toxic-time-bomb-.html>

<sup>3</sup> <http://www.businessweek.com/news/2010-07-02/oil-spills-raise-ocean-s-arsenic-level-create-toxic-time-bomb-.html>

<sup>4</sup> <http://www.fda.gov/Food/ucm210970.htm>

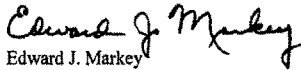
Dr. Hamburg  
Page 3 of 3

not, what protocol does FDA use to evaluate for the presence of arsenic? Please provide copies of all protocols being used.

3. How does FDA plan on monitoring the long-term effect that oil, other hydrocarbons and other toxic compounds such as arsenic have on aquatic life in the Gulf of Mexico and any potential effect that consumption of seafood from the Gulf has on human health?
4. Will FDA continue to conduct long-term monitoring for arsenic to ensure that the chemical does not bioaccumulate in the food chain for months or years after the leak has stopped and the oil is visibly removed?
5. What federal standards are in place for how much arsenic can be present in seafood consumed by humans?

Thank you for your assistance and cooperation in responding to this request. Should you have any questions, please have your staff contact Dr. Michal Freedhoff of the Energy and Environment Subcommittee staff or Dr. Avenel Joseph of my staff at 202-225-2836.

Sincerely,



Edward J. Markey  
Member of Congress



## DEPARTMENT OF HEALTH &amp; HUMAN SERVICES

Food and Drug Administration  
Silver Spring, MD 20993

The Honorable Edward J. Markey  
House of Representatives  
Washington, D.C. 20515-2107

SEP 16 2010

Dear Mr. Markey:

Thank you for your letter of July 13, 2010, in which you expressed concern about possible arsenic and oil contamination of marine food in the Gulf of Mexico following the explosion and subsequent oil spill involving the Deepwater Horizon drilling rig.

We want to assure you that the Food and Drug Administration (FDA or the Agency) is working closely with the National Oceanic and Atmospheric Administration (NOAA), the Environmental Protection Agency (EPA), other Federal partners and impacted states to make sure that decisions regarding the safety of seafood from the Gulf and the reopening of waters previously closed to commercial fishing are made appropriately.

The Federal government, most notably FDA, NOAA, and EPA, continues to play an active role in ensuring the safety of seafood harvested from federal and state waters, working in conjunction with regulatory agencies in the Gulf states. We have established a comprehensive, coordinated, multi-agency program to ensure that seafood from the Gulf of Mexico is safe to eat. This level of effort is important not only for consumers, who need to know their food is safe, but also for the fishery industry, which needs to be able to sell its products with confidence.

The Federal and state governments are using a multi-pronged approach to ensure that marketed seafood from the Gulf of Mexico is not contaminated as a result of the oil spill. These measures include the precautionary closure of fisheries, surveillance testing of seafood products, and a heightened emphasis on FDA's Hazard Analysis and Critical Control Point (HACCP) regulations. In conjunction with NOAA and the Gulf states, FDA has developed a strict protocol for reopening closed Gulf fisheries in a manner that ensures the safety of product from those areas. Also, out of an abundance of caution and in order to gather additional information, FDA and NOAA are currently in the final stages of developing an analytical method to test for the potential presence of dispersants in seafood. The method will test for the presence of dioctyl sulfosuccinate sodium salt (DOSS), which will serve as an effective marker for the presence of dispersants applied in the Gulf.

With respect to the issue of arsenic in seafood, while we understand the concern that consumers may have about such a possibility, it is important to note that the potential for the Deepwater Horizon oil spill to result in elevated inorganic arsenic in seafood is based

Page 2 – The Honorable Edward J. Markey

on a theoretical premise. Inorganic arsenic is the major form of arsenic that is of health concern and has been the subject of U.S. drinking water regulations, because the threat of contamination occurs primarily in drinking water (International Programme on Chemical Safety (IPCS), 1981).<sup>1</sup> While it is known that crude oil does contain a number of elements which can include inorganic arsenic, the levels vary by the source of crude oil. No scientific evidence to date shows that crude oil originating from the Deepwater Horizon incident contains high levels of inorganic arsenic, nor does it establish any basis for expecting elevated levels of inorganic arsenic in the Gulf ecosystem. The article referenced in your letter mentions a study under laboratory conditions which led the authors to hypothesize that this may occur, but our scientists do not observe a quantitative relationship between those conditions and those of the Deepwater Horizon spill in the Gulf. FDA is currently examining a sample of crude oil from the Deepwater Horizon incident to better understand the level and type of arsenic present.

Furthermore, it is known that inorganic arsenic taken up by fish and aquatic animals is largely converted to a relatively nontoxic, organic form (Coulson et al, 1935 *J Nutr* 10: 255; IPCS, 1981). This organic arsenic, also known as “fish arsenic,” is primarily in the form of arsenobetaine and arsenocholine and is commonly found in fish and bivalve shellfish. When ingested, fish arsenic is largely excreted unmetabolized with rapid and total clearance in human urine within 48 hours, and thus would not be expected to accumulate in human tissues. In addition, a recent review in 2007 by the Centers for Disease Control and Prevention’s Agency for Toxic Substances and Disease Registry (ATSDR) indicates that toxicity studies have found fish arsenic to be essentially nontoxic, as it is excreted unchanged.<sup>2</sup> Finally, a recent deliberation on arsenic by a World Health Organization (WHO) expert committee reached just such a conclusion. The report stated “The Committee noted that the organic forms of arsenic present in seafood needed different consideration from the inorganic arsenic in water. It concluded that there had been no reports of ill-effects among populations consuming large quantities of fish...”<sup>3</sup>

Based on the available scientific information, we believe that the toxicity of the organic arsenic is quite low and does not pose a substantiated public health concern from the consumption of seafood from the Gulf of Mexico. We will continue to aggressively monitor the scientific literature and take immediate action if new science becomes available.

FDA is actively working with NOAA, which manages a program called “Mussel Watch” which, in the Gulf region, collects and analyzes oysters from predetermined locations along the coast for a variety of contaminants, including heavy metals (including arsenic) and industrial contaminants. Oysters are an ideal sentinel species for tracking long-term changes in the environment because they bioconcentrate these contaminants more extensively than do other edible species. The Mussel Watch program has been in

<sup>1</sup> Available at <http://www.inchem.org/documents/ehc/ehc/ehc018.htm>

<sup>2</sup> <http://www.atsdr.cdc.gov/toxprofiles/tp2.pdf>

<sup>3</sup> [http://www.who.int/foodsafety/chem/summary72\\_rev.pdf](http://www.who.int/foodsafety/chem/summary72_rev.pdf)

Page 3 – The Honorable Edward J. Markey

existence for decades, so there is a good historical record of background levels against which post-spill data can be compared. FDA intends to work with NOAA to ensure that this program meets the long-term monitoring needs discussed here.

In response to your specific inquiries, we have restated your questions below, in bold type, followed by the Agency's responses.

1. **What is FDA doing to assess whether the ingestion of contaminated species by other more mobile fish is not resulting in the contamination of marine seafood caught outside the areas closed to fishing?**

With regard to possible oil contamination, both FDA and NOAA are analyzing a variety of seafood samples, including finfish and shellfish that have been commercially harvested from Gulf waters, for polycyclic aromatic hydrocarbons (PAH), the primary contaminants of concern in oil. So far, the testing is not showing levels of PAHs above the background levels that were present before the spill occurred. In fact, to date, we are seeing virtually no evidence of PAHs in the seafood, with the levels found being 100 to 1,000 times below the levels of concern and, in many cases, below our limits of detection, which are in the low parts per billion range. For several of the PAH components, the lower limit of detection is 5 parts per billion. For mobile fish, such as finfish, the data indicate that they clear PAHs very rapidly from their bodies.

With regard to dispersants, the currently available information indicates that dispersants are highly unlikely to accumulate in the flesh of fish at a level above what is in the environment. We discussed this issue in further detail in our response of July 28, 2010, to your previous letter. In addition, as noted above, FDA is in the final stages of developing and validating a chemical test for DOSS as a marker to indicate any presence of dispersants, out of an abundance of caution and in order to gather additional information.

2. **While FDA's webpage states that "FDA and NOAA have agreed on a protocol to determine when closed federal waters can be reopened," the protocol relies heavily on the ability to pass a sensory and chemical analysis to identify oil and its residues. Does this also identify when seafood is contaminated with arsenic? If not, what protocol does FDA use to evaluate for the presence of arsenic? Please provide copies of all protocols being used.**

The protocol agreed to between FDA and NOAA for determining when closed federal waters can be reopened does not cover testing for arsenic. As noted above, current scientific evidence supports the conclusion that if arsenic occurs in seafood, it is likely to be present in an organic form that does not pose a substantiated risk to public health. Nonetheless, the previously described Mussel Watch program will serve to identify any changes in arsenic levels in the Gulf environment, and we will adjust our protocol if warranted.

Page 4 – The Honorable Edward J. Markey

- 3. How does FDA plan on monitoring the long-term effect that oil, other hydrocarbons and other toxic compounds such as arsenic have on aquatic life in the Gulf of Mexico and any potential effect that consumption of seafood from the Gulf has on human health?**

FDA will continue to monitor seafood and is working to develop a long-term seafood monitoring program, in conjunction with NOAA, EPA, and other agencies with responsibility for the aquatic environment, to detect any negative health effects resulting from the oil spill. The monitoring program will remain in place for as long as is necessary to ensure that seafood from the Gulf remains as safe as it was before the Deepwater incident.

- 4. Will FDA continue to conduct long-term monitoring for arsenic to ensure that the chemical does not bioaccumulate in the food chain for months or years after the leak has stopped and the oil is visibly removed?**

The previously described Mussel Watch program will serve to identify any changes in arsenic levels in the Gulf environment.

- 5. What federal standards are in place for how much arsenic can be present in seafood consumed by humans?**

FDA does not currently have standard levels for allowable arsenic in seafood. Again, the current scientific evidence supports the conclusion that if arsenic occurs in seafood, it is present in an organic form that does not pose a substantiated risk to public health. If however, Mussel Watch, or other data suggest a change in the levels of arsenic in Gulf seafood, FDA will reconsider the need for establishing such standards.

Thank you for sharing your concerns with us. If we may be of further assistance, please let us know.

Sincerely,



Jeanne Ireland  
Assistant Commissioner  
for Legislation





DEPARTMENT OF HEALTH AND HUMAN SERVICES

Food and Drug Administration  
Silver Spring MD 20993

The Honorable Edward J. Markey  
Chairman  
Subcommittee on Energy and Environment  
Committee on Energy and Commerce  
House of Representatives  
Washington, D.C. 20515-2107

OCT 29 2010

Dear Chairman Markey:

I am writing to provide you with an update on activities undertaken by the Food and Drug Administration (FDA or the Agency) to better understand and monitor the potential for contamination of seafood in the Gulf of Mexico with dispersants used in connection with the Deepwater Horizon oil spill.

As we described in our letter to you of September 16, 2010, FDA has been working with the National Oceanic and Atmospheric Administration (NOAA) to develop, validate and deploy a chemical test to detect dispersants used after the oil spill in fish, oysters, crab and shrimp. We are pleased to inform you that we are now using this analytical method to test for the potential presence of dispersants in seafood. Specifically, the method tests for the presence of dioctyl sulfosuccinate sodium salt (DOSS), which is a significant component of the dispersants applied in the Gulf, and therefore, an effective marker for the presence of these compounds.

Seafood samples were collected from June to October covering a wide area of the Gulf. The samples come from open areas in state and federal waters, and from fishermen who brought fish to the docks at the request of federal seafood analysts. The samples come from a range of species, including grouper, tuna, wahoo, swordfish, gray snapper, butterfish, red drum, croaker, and shrimp, crabs and oysters. Using the DOSS detection method, scientists have chemically tested 1,735 seafood samples for the presence of dispersant.

The results confirm what we have been finding through our sensory testing—that none of the samples pose a threat to human health. Almost all of the samples (over 99 percent) showed no detectable dispersant residue. The trace amounts of DOSS found in 13 of the 1,735 samples were below one part per million, well below the level of concern of 100 parts per million for finfish and 500 parts per million for shrimp, crabs and oysters.

Dispersants are designed to dilute and biodegrade quickly. The current scientific data indicate that dispersants do not concentrate in seafood in amounts above the background levels that can be found in the environment. Controlled exposure studies conducted by

Page 2 – The Honorable Edward J. Markey

FDA confirm this lack of concentration, showing levels in fish flesh much lower than what is found in water.

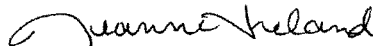
We also note that DOSS is used as an indirect food additive in beverages and is a generally recognized as safe (GRAS) substance for such use. It is also a common ingredient in other consumer products such as cosmetics, laxatives, and household detergents and cleaners.

The precautionary approach we took in closing waters to fishing, the rigorous testing methods used for reopening areas, and our active monitoring of fish in the marketplace continue to give us confidence in the safety of seafood being caught and sold in the Gulf. Nonetheless, building upon the extensive testing and protocols already deployed by federal, state and local officials on the fishing waters of the Gulf, FDA and NOAA will now use this second test for dispersants, in addition to the sensory and chemical analysis of polycyclic aromatic hydrocarbons (PAHs), before reopening additional federal waters. FDA also intends to use this testing methodology in our post-reopening surveillance, consistent with additional funding that may be made available.

It is our priority to protect consumers and prevent contaminated seafood from entering the marketplace. We also want to make sure that consumers have total confidence in the safety of seafood being harvested from the Gulf and have no qualms about serving it to their families.

Thank you again for sharing your concerns with us. If we may be of further assistance, please let us know.

Sincerely,

A handwritten signature in cursive script that reads "Jeanne Ireland".

Jeanne Ireland  
Assistant Commissioner  
for Legislation

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 ROBERT C. LATTA, OHIO

July 13, 2010

Admiral Thad W. Allen  
 National Incident Commander  
 United States Coast Guard  
 2100 Second Street, SW Stop 7101  
 Washington, DC 20593-7101

Dear Admiral Allen:

BP has now installed the three ram capping stack on the Deepwater Horizon Lower Marine Riser Package. BP now plans on closing the vents on this capping stack and conducting pressure testing to determine if the well can safely be shut in. Pressure readings will be used to determine if sufficient well integrity exists and a determination will be made whether it is safe to completely shut in the well or whether additional oil collection should continue in order to relieve pressure on the well.

In the past, you have raised questions about wellbore integrity. On June 17, 2010, you noted that "we don't know if the wellbore has been compromised or not. One of the reasons we did not continue with top kill at higher pressures, there was a concern that if we increased the pressure too hard we might do damage to the casings and the wellbore. What we didn't want was open communication of any oil from the reservoir outside the wellbore that might get into the formation and work its way to the subsea floor and then result in uncontrolled discharge at that point."

At today's press conference you raised similar issues and suggested that the pressure readings will help to determine the advisability of shutting in the well, stating that:

"I think we are very confident we can take control of this hydrocarbon stream and then slowly close all these valves and stop the emission of hydrocarbons. What we can't tell is the current condition of the well bore below the sea floor and the

Admiral Allen  
Page 2 of 2

implication of the pressure readings. That is in fact why we're doing a well integrity test."

In light of the importance of understanding the situation regarding wellbore integrity, I am asking that the Coast Guard provide the Subcommittee with additional information regarding wellbore integrity at the Deepwater Horizon site. Specifically, I would like to know:

- 1) What information, if any, has BP provided to the Coast Guard regarding well bore integrity at the site?
- 2) What documents does the Coast Guard have regarding well integrity and the decision to stop the top kill procedure?
- 3) Did BP and the Coast Guard reach any conclusions regarding well integrity based on the failure of the top kill procedure?
- 4) Please provide us with all correspondence, including electronic correspondence, between the Coast Guard and BP, relating to wellbore integrity at the Deepwater Horizon site.
- 5) What risk does full and complete shut in of the well for an extended period of time pose for wellbore integrity?
- 6) You first mentioned the possibility of shutting in the well in your July 2 press briefing. When did BP first suggest that the well could be shut-in? What did the government do to assess this procedure?

Thank you very much for your attention to this important matter. Please provide your response within 10 working days or not later than July 27. If you have any questions or concerns, please have your staff contact Dr. Michal Freedhoff of the Energy and Environment Subcommittee staff at 202-225-2836

Sincerely,



Edward J. Markey  
Chairman  
Subcommittee on Energy and  
Environment  
Committee on Energy and  
Commerce

Cc: Honorable Henry Waxman, Chairman,  
Committee on Energy and Commerce  
Honorable Joe Barton, Ranking Member  
Honorable Fred Upton, Ranking Member

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ROBERT C. LATTI, OHIO

July 14, 2010

Mr. Lamar McKay  
President and CEO,  
BP America, Inc.  
501 Westlake Park Boulevard  
Houston, Texas, 70779

Dear Mr. McKay:

I am hopeful that BP will soon be able to control the flow of oil from the Deepwater Horizon/Macondo well bore and end the discharge of oil and methane into the Gulf of Mexico. BP has now installed the three ram capping stack on the Deepwater Horizon Lower Marine Riser Package and has begun to conduct pressure testing to determine if the well can safely be shut in. Pressure readings will be used to determine if sufficient well integrity exists and a determination will be made whether it is safe to completely shut in the well or whether additional oil collection should continue in order to relieve pressure on the well.

The new three ram capping stack will provide BP with the capability to collect 100 percent of the oil flowing from the well. That will provide us with the chance to know with certainty the true amount of oil and methane that has been spilling into the Gulf. Accordingly, in the event that additional oil collection should prove necessary, BP must collect and measure 100 percent of the hydrocarbons flowing from the well so that we can determine the actual flow rate once and for all.

I am concerned that without such a monitored collection effort, which must be conducted under supervision of the Flow Rate Technical Group, we may never be able to provide a definitive answer to the question of how much oil has actually been released. Although there have been numerous estimates and projections for flow rate, nothing will

Lamar McKay  
Page 2 of 3

be more conclusive than actual collection of 100 percent of the oil and methane that is now flowing from the well. In this regard, BP's initial estimates of 1000 and 5000 barrels per day have proven to be far too low and BP has also not allowed more definitive testing to occur, as I have mentioned in previous letters to BP.

Accordingly, I am requesting that BP prepare to collect 100 percent of the oil and methane from the well for a representative time frame and to provide the Flow Rate Technical Group with sufficient information and access, so that a definitive flow rate determination can be made. I am forwarding this letter to Dr. Marcia McNutt, Director of the United States Geological Survey, as the Chair of the Flow Rate Technical Group.

Of course if BP determines that the appropriate path is to fully shut in the well, until the relief well is completed, then we would not want to delay such a process in any way. However, even in that situation there may still be circumstances in which all vents on the caps are closed and full collection of oil and methane could take place for an appropriate amount of time. If so, such collection should take place at an appropriate point.

In order to understand whether or not BP will agree to collect 100 percent of the oil and methane, for at least a limited period of time, I am asking that you respond to the following questions:

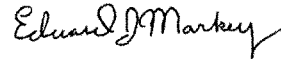
- 1) In the event that BP does not shut in the well completely, will BP agree to collect, under the supervision of the Flow Rate Technical Group, the full volume of oil and methane being released from the well for a period of time sufficient to make a reliable determination of the 24 hour flow rate? If not, why not?
- 2) Is the three ram capping stack exerting backpressure on the well? If so, please provide the pressure readings necessary to determine the full unimpeded flow rate.
- 3) Does BP at present have in place at the surface sufficient collection capability to collect 100 percent of the oil from the well and to measure and determine the volume of that oil?
- 4) If not, what is the current collection capacity and when will sufficient collection capacity be available?

Please respond to these questions by close of business on July 16<sup>th</sup> 2010.

Lamar McKay  
Page 3 of 3

Thank you very much for your attention to this important matter. If you have any questions or concerns, please have your staff contact Dr. Michal Freedhoff of the Energy and Environment Subcommittee staff at 202-225-2836.

Sincerely,

A handwritten signature in black ink, reading "Edward J. Markey". The signature is fluid and cursive, with the first name "Edward" and last name "Markey" clearly legible.

Edward J. Markey  
Chairman  
Subcommittee on Energy and Environment

Cc: Honorable Henry Waxman, Chairman,  
Committee on Energy and Commerce  
Honorable Joe Barton, Ranking Member  
Honorable Fred Upton, Ranking Member  
Dr. Marcia McNutt, United States Geological Survey and Chair, Flow Rate  
Technical Committee

WILMERHALE

July 16, 2010

David S. Molot

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david.molot@wilmerhale.com

The Honorable Edward J. Markey, Chairman  
Subcommittee on Energy and Environment  
Committee on Energy and Commerce  
United States House of Representatives  
2125 Rayburn House Office Building  
Washington, DC 20515-6115

Re: Response to Chairman Markey's Correspondence Dated July 14, 2010, to Mr. Lamar McKay, Chief Executive Officer of BP America Inc.

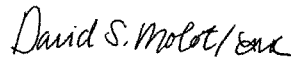
Dear Chairman Markey:

I am writing on behalf of BP America Inc. ("BPA") in response to your July 14, 2010 letter to Mr. Lamar McKay, President and Chief Executive Officer of BPA, in which you asked BP to provide information concerning the MC252-1 well. In your letter, you asked BP to provide the requested information within 48 hours.

As BP has made clear to you in previous letters, BP appreciates your concerns and is committed to cooperating with your inquiries. However, as stated in our July 15, 2010 letter, in which we responded to your July 13, 2010 letter, BP—working at the direction of Unified Command in conjunction with government scientists led by Secretary of Energy Steven Chu—is currently conducting a Well Integrity Test. As stated in our July 15, 2010 letter, BP will provide you data about the well integrity test after the test has been completed. Moreover, decisions on how to proceed after the completion of the well integrity test will be made by Unified Command.

If you have any questions, or require additional information, please feel free to contact me or to have your staff contact Liz Reicherts at (202) 457-6585.

Sincerely,



David S. Molot

cc: Hon. Henry Waxman, Chairman  
Hon. Joe Barton, Ranking Member  
Hon. Fred Upton, Ranking Member



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July 18, 2010

Admiral Thad W. Allen  
 Commandant  
 United States Coast Guard  
 2100 Second Street, SW Stop 7101  
 Washington, DC 20593-7101

Dear Admiral Allen:

BP continues to conduct pressure testing of the Deepwater Horizon/Macondo well and I am hopeful that these pressure tests demonstrate that the well has integrity and can continue to be controlled. As of today, it appears that while well pressure has risen steadily as hoped, the pressure readings are lower than expected and have not yet risen above 7000 pounds per square inch. However, we do not yet know the full significance of these measurements.

At a press conference today, BP's chief Operating Officer, Doug Suttles, said that: "We're not seeing any problems, at this point, any issues with the shut-in" and because of that, Suttles said, "we'll continue to leave the well shut in." In a Washington Post article from today entitled "*BP Says It Plans To Keep Gulf Oil Well Cap Closed*" a BP spokesman indicates that "the decision was made in consultation with the government, and that Allen has the authority to have the well opened if he sees the need." Suttles also indicates that fitting the well with collection capability will require the release of additional oil into the ocean.

I am writing to seek clarification regarding this situation. Just yesterday, you indicated that once the test is complete "we will immediately return to containment, reopening the well and collecting oil through pipes up to surface ships." And in a release today you also indicated that "Per my conversation with BP Executive Bob Dudley as recently as 11 a.m. EST today, nothing has changed about the joint agreement announced yesterday between BP and the US government. The ongoing well integrity test will

Admiral Allen

Page 2 of 3

continue until 4 p.m. EST today, with the potential for additional extensions in 24-hour increments.”

As you may know, on Wednesday July 14, 2010, I wrote to BP asking them for their commitment to conduct a full flow rate test, once an oil collection system was in place that could collect 100 percent of the hydrocarbons flowing from the well. Although I have not received a response from BP, if the well remains fully shut in until the relief well is completed, we may never have a fully accurate determination of the flow rate from this well. If so, BP, who has consistently underestimated the flow rate, might evade billions of dollars in fines. It may also mean that the true environmental extent of the disaster remains unclear and it could hamper our efforts to respond to the spill and clean up the Gulf, a process which has only just begun. This situation is not an acceptable outcome for the American people.

Accordingly, it is imperative that we understand your current plans and be able to assess the ramifications of different options at this point. I am also concerned, as I know you are, that continuing to keep the well fully shut in could pose risks of additional problems with well integrity, an issue that I have raised with both you and BP in separate letters over the past few weeks.

Moreover, if it is necessary to again allow the well to flow, either because a decision to keep it shut in indefinitely is unsound, or in order to conduct the relief well “bottom kill,” then there would be no reason at that point for not taking the opportunity to conduct a 100 percent hydrocarbon collection test. Indeed, ongoing collection of 100 percent of the oil and methane might be the preferred approach, since it might eliminate the flow of additional oil and methane into the Gulf, and might also result in reduced pressure on the well.

In order to better understand this situation, I would ask you to respond to the following questions immediately:

- 1) Has a decision been made to continue to shut in the well after the integrity test is complete? If so, did you make that decision or concur in it? Do the pressure readings to date indicate that this is the preferred approach?
- 2) If a decision is not made to shut in the well, and a collection strategy is put in place, when will sufficient capacity and capability be available to collect 100 percent of the oil and methane?
- 3) If a 100 percent hydrocarbon collection capacity is installed, will a 100 percent flow rate test be conducted at the earliest possible point in order to determine the true flow rate from this well as of July, 2010? If not, how will you be able to determine with any precision the actual amount of oil that has been released from the well, so that the government can determine BP’s potential legal liability for the environmental damage it has caused?
- 4) How will different collection and containment strategies affect the release of oil and methane into the ocean? Will installation of collection capacity necessarily require some release of oil and methane into the ocean, as Mr.

Admiral Allen  
Page 3 of 3

Suttles indicated? If so, how much? Will the relief well bottom kill necessarily require release of hydrocarbons into the ocean, even if the well remains shut in up to that point?

- 5) Is it possible to design an oil collection strategy (as opposed to a complete shut in) in which no more oil or methane is released into the ocean?
- 6) If collection of 100 percent of the hydrocarbons becomes possible in such way as to also prevent releases of hydrocarbons into the ocean, could that be a preferable strategy until the relief well is complete, since it would both relieve well pressure and contain hydrocarbons?

Thank you very much for your attention to this important matter. Please provide your response immediately and if you cannot respond in writing within the next 24 hours, please have your staff contact Dr. Michal Freedhoff of the Subcommittee staff at 202-225-2836 or Mr. Michael Goo of my staff at 202-225-4012 to arrange a date upon which a full and complete response to the Subcommittee's inquiry will be provided.

Sincerely,



Edward J. Markey  
Chairman  
Subcommittee on Energy and  
Environment  
Committee on Energy and  
Commerce

Cc: Honorable Henry Waxman, Chairman,  
Committee on Energy and Commerce

Honorable Joe Barton, Ranking Member  
Committee on Energy and Commerce

Honorable Fred Upton, Ranking Member, Subcommittee on Energy and  
Environment

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July 20, 2010

Admiral Thad W. Allen  
 National Incident Commander  
 United States Coast Guard  
 2100 Second Street, SW Stop 7101  
 Washington, DC 20593-7101

Mr. Lamar McKay  
 President and CEO  
 BP America, Inc.  
 501 Westlake Park Boulevard  
 Houston, Texas 77079

Dear Admiral Allen and Mr. McKay:

In recent weeks, BP and Coast Guard officials have maintained that the relief wells were the ultimate solution to kill the Deepwater Horizon/Macondo well. However, in recent days, BP's Kent Wells said that the company is now considering an additional technique, known as a "bullhead kill." This procedure has been described as similar to the "top kill" in which mud is introduced at the blowout preventer, but may benefit from the current static (no flow) condition and lower-than-expected pressure of the well. We all want a quick resolution to this disaster, but we must be assured that proposed solutions will not make the situation any worse.

Admiral Allen and Mr. McKay  
Page 2 of 3

At the same time, the low pressure that may make a bullhead kill a more viable procedure is also at the center of an ongoing scientific assessment regarding well integrity. While the well pressure has been building steadily since the integrity test was initiated, the current pressure (just over 6800 psi) remains lower than initially expected. Scientists and engineers continue to evaluate whether the low pressure is due to a lack of well integrity, depletion of oil and gas, or some combination of the two. It is critical that we understand the implications of a bullhead kill attempt under the various scenarios that may be operating in the well.

In addition, I remain concerned that we may not conduct a flow rate test. I hope that Unified Command is continuing to explore a method that could continue to prevent a significant amount of oil from spilling into the Gulf, while providing a more precise measurement of the flow rate of the spill. A more precise measurement of that flow rate, even done this long after the start of the spill, would provide greater understanding of the flow rate and depletion of the reservoir and the extent of environmental damage over the course of this catastrophe. Obtaining answers to these questions is important in assessing BP's full legal liability for its actions.

In order to better understand this situation, I would ask you to respond to the following questions immediately:

- 1) If the well integrity has been compromised, what are the potential implications of attempting a bullhead kill procedure?
- 2) What additional risks are undertaken with the bullhead kill compared to the alternatives (i.e., a return to containment using production platforms at the sea surface or a continuation of the integrity test conditions)?
- 3) Under what conditions (e.g., pressure threshold) would the choke and kill lines used in the bullhead kill be at risk of damage?
- 4) Could forcing the hydrocarbons back into the reservoir through the bullhead kill procedure cause damage that could make the bottom kill more challenging or exacerbate any seeps that may be present?
- 5) If hydrocarbons are flowing in the annulus, will this decrease the chances of the success of the bullhead kill?
- 6) Would a bullhead kill attempt slow progress on the bottom kill in preparation?

Admiral Allen and Mr. McKay  
Page 3 of 3

- 7) Under what conditions and on what timeline will a bullhead kill be authorized by Unified Command and pursued by BP? Once initiated, how long is the bullhead kill anticipated to take?
- 8) Would the bullhead kill also kill off any chance of conducting a 100 percent collection strategy?

Thank you very much for your attention to this important matter. Please provide your response immediately and if you cannot respond in writing within the next 24 hours, please have your staff contact Dr. Michal Freedhoff of the Subcommittee staff at 202-225-2836 or Mr. Michael Goo of my staff at 202-225-4012 to arrange a date upon which a full and complete response to the Subcommittee's inquiry will be provided.

Sincerely,



Edward J. Markey  
Chairman  
Subcommittee on Energy and  
Environment  
Committee on Energy and  
Commerce

Cc: Honorable Henry Waxman, Chairman,  
Committee on Energy and Commerce

Honorable Joe Barton, Ranking Member  
Committee on Energy and Commerce

Honorable Fred Upton, Ranking Member,  
Subcommittee on Energy and Environment

WILMERHALE

July 21, 2010

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The Honorable Henry A. Waxman, Chairman  
Committee on Energy and Commerce  
United States House of Representatives  
2125 Rayburn House Office Building  
Washington, D.C. 20515-6115

The Honorable Bart Stupak, Chairman  
Subcommittee on Oversight and Investigations  
United States House of Representatives  
2125 Rayburn House Office Building  
Washington, D.C. 20515-6115

**Re: Testimony of Dr. Tony Hayward, June 17 Hearing of Committee on  
Energy and Commerce, Subcommittee on Oversight and Investigations**

Dear Chairman Waxman and Chairman Stupak:

I am writing on behalf of BP America, Inc. ("BPA") and Dr. Tony Hayward regarding testimony provided by Dr. Hayward during the June 17, 2010 hearing held by the Committee on Energy and Commerce, Subcommittee on Oversight and Investigations. Dr. Hayward would like to clarify a statement he made during the hearing related to drilling mud and asked that we inform the Committee. Specifically, Dr. Hayward asked us to clarify a response he gave in a colloquy with Representative Markey (Representative Markey: "BP has dumped 30,000 gallons of drilling mud in the ocean. Drilling mud is often made using synthetic oils and other chemicals and, in this case, also may have used significant quantities of antifreeze, which is toxic. Mr. Hayward, will you commit to disclosing the ingredients of the drilling mud?"; Dr. Hayward: "Yes, we will. I believe that all of the mud that has gone into the ocean is water-based mud with no toxicity whatsoever.").

Dr. Hayward correctly noted in his answer that the drilling mud was water-based. He did not, however, have before him at that time the list of ingredients actually used in the drilling mud for the top kill procedure. As set forth in the written procedures submitted to and approved by the U.S. Coast Guard and the Minerals Management Service for the top kill procedure, the water-based mud used in that procedure contained the following ingredients: fresh water (which, as used, contained a sodium chloride brine solution), caustic soda, DUOVIS (which consists of xanthan gum and Glyoxal), ethylene glycol, and MI BAR (which consists of Barite and Crystalline Silica Quartz). Approximately 30,000 barrels of drilling mud were used in the top kill procedure.

Hon. Henry A. Waxman, Chairman  
Hon. Bart Stupak, Chairman  
July 21, 2010  
Page 2

WILMERHALE

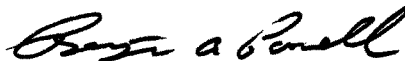
After answering Representative Markey's question, which Dr. Hayward believed at the time to be fully accurate, he has since learned that there could be an argument that certain of the ingredients may be toxic in certain circumstances. As noted by Representative Markey in other contexts, including in a June 14, 2010 letter request for information to BP, certain of the individual ingredients of the drilling mud, including ethylene glycol and barite, can have toxicity in certain applications, depending on the context and circumstances of those applications.

BP is presently undertaking a number of efforts to monitor for any potential impacts to the environment from the April 20, 2010 incident and the response thereto. On May 24, 2010, BP committed up to \$500 million to a 10-year Gulf of Mexico Research Initiative (GRI) to study the impact of the incident, and its associated response, on the marine and shoreline environments of the Gulf. BP has also committed \$25 million in fast-track funding to the Florida Institute of Oceanography, Louisiana State University, and the Northern Gulf Institute, in order to ensure that baseline sampling could take place as soon as possible. In addition to the efforts initiated by BP in this regard, the U.S. Coast Guard and the Environmental Protection Agency are conducting a Natural Resources Damages assessment of the Gulf Coast region following the April 20 incident and response.

Because the ongoing testing and monitoring of the environmental effects of the specific formulation and application of the drilling mud used in the top kill procedure has not yet concluded, however, it is not possible at this juncture to state definitively whether any toxic effects are or will be detected. Dr. Hayward wants to clarify the above referenced testimony that the drilling mud had no toxicity whatsoever, and make clear that it is not now scientifically determinable if the drilling mud was or was not toxic under the conditions it was used in the top kill procedure. BP has worked, and will continue to work, to ensure that it undertakes all available measures to stop the spill, and to ensure that its efforts to do so result in no further, avoidable harm to the marine environment of the Gulf of Mexico.

Please contact me or Liz Reicherts at 202-457-6585 if you have any questions.

Sincerely,



Benjamin A. Powell

cc: Rep. Joe Barton, Ranking Member, Committee on Energy & Commerce  
Rep. Michael Burgess, Ranking Member, Subcommittee on Oversight & Investigations



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EDWARD J. MARKEY  
 7TH DISTRICT, MASSACHUSETTS

**Congress of the United States**  
**House of Representatives**  
 Washington, DC 20515-2107

July 26, 2010

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Mr. Carl-Henric Svanberg  
 Chairman  
 BP  
 International Headquarters  
 1 St James's Square  
 London, SW1Y 4PD  
 United Kingdom

Dear Mr. Svanberg,

According to news reports, at this week's meeting of BP's board of directors, Tony Hayward will be removed as Chief Executive Officer of BP. News reports further indicate that Mr. Hayward could receive a severance package of as much as \$18.5 million upon stepping down.

At a time when BP should be devoting every possible resource to ending the spill, cleaning up the Gulf and fully compensating the residents who have had their livelihoods impacted, I find it extremely troubling that BP's board would consider providing such a large severance package to Mr. Hayward. I therefore urge you to delay any compensation to Mr. Hayward as part of a severance package until BP has paid all claims associated with the Deepwater Horizon oil spill.

According to a report in the *New York Times*, Kenneth Feinberg, the administrator of the \$20 billion claims escrow account, expressed concern on Saturday that BP is stalling the payment of claims. Despite committing an initial \$20 billion dollars to pay claims, BP has paid out only more than \$200 million and BP has reportedly agreed to sell \$7 billion worth of assets to Apache Corporation to raise capital. As BP is raising capital, it must not simultaneously divert funds to executive compensation for Mr. Hayward.

BP should be dedicating its resources to compensating the residents of the Gulf Coast who are the victims of this tragedy, not handing out multi-million dollar golden parachutes. BP has an obligation to the residents of the Gulf that it must meet. Therefore, BP's board of directors should not approve any compensation package for Mr. Hayward until every resident of the Gulf Coast has been fully compensated.

Thank you for your attention to this matter.

Sincerely,

  
 Edward J. Markey  
 Member of Congress

HENRY A. WAXMAN, CALIFORNIA  
CHAIRMAN

JOE BARTON, TEXAS  
RANKING MEMBER

ONE HUNDRED ELEVENTH CONGRESS  
**Congress of the United States**  
**House of Representatives**  
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Majority (202) 225-2927  
Minority (202) 225-3641

July 30, 2010

Admiral Thad W. Allen  
National Incident Commander  
United States Coast Guard  
2100 Second Street SW Stop 7101  
Washington, DC 20593-7101

Dear Admiral Allen:

I write to request additional information regarding your decisions to allow BP to continue to use large volumes of dispersants in the Gulf of Mexico, including application of these toxic chemicals on the surface of the ocean. In reviewing your response to my June 24, 2010 letter I have become aware of additional potential deficiencies regarding the U.S. Coast Guard's (USCG's) efforts to oversee BP's use of these chemicals. The May 26<sup>th</sup> directive from the USCG and the Environmental Protection Agency (EPA) told BP to eliminate the use of surface dispersants except in "rare cases when there may have to be an exemption."<sup>1</sup> However, a review of requests for such exemptions made by BP and the Houma Unified Command (which consists of U.S. Coast Guard and other personnel and reports to the Federal On Scene Coordinator) and the approvals from the Coast Guard Federal on Scene Coordinator (FOSC)<sup>2</sup> indicates that these exemptions are in no way a "rare" occurrence, and have allowed surface application of dispersant to occur virtually every day since the Directive was issued on May 26, 2010, until last month when the flow of oil from the hemorrhaging well was stopped by placement and closure of a new sealing cap.

As you know, according to the Deepwater Horizon Unified Command, more than 1.8 million gallons of dispersants have been used both above and below the surface of the Gulf waters, contributing to a toxic stew of chemicals, oil and gas with impacts that are not well understood. There has been recent confirmation that the use of dispersants has contributed to the formation of large plumes of oil that are suspended well below the ocean surface.<sup>3</sup> Many experts have raised concerns that these plumes could cause significant harm to aquatic life in the Gulf of

<sup>1</sup> <http://www.epa.gov/bpspill/dispersants/directive-addendum3.pdf>

<sup>2</sup> <http://www.deepwaterhorizonresponse.com/go/doctype/2931/57851/>

<sup>3</sup> <http://www.noaa.gov/scienceemissions/bpoilspill.html>

Mexico. This can occur via two mechanisms. First, the toxic constituents of oil and dispersants can poison the aquatic life exposed to them leading to death or non-lethal harm and contamination of the marine food chain. Second, as naturally-occurring bacteria consume the oil, they also use up oxygen that is critical to the survival of many marine organisms. This can in turn lead to localized depletions of oxygen levels that could cause marine life to die of asphyxiation.

On May 17, 2010 I wrote<sup>4</sup> to EPA raising concerns about the risks and consequences of using unprecedented volumes of dispersants in the Gulf of Mexico. Three days later, on May 20, 2010,<sup>5</sup> EPA and the USCG directed BP to identify and start using a dispersant that is less toxic than Corexit, the trademarked name for the current formulation used in the Gulf. After receiving BP's response, which defended the company's choice in selecting Corexit, EPA and the USCG announced that they were not satisfied with BP's evaluation of alternatives and while the EPA undertook its own independent scientific assessment, they directed BP to completely eliminate surface application of dispersants except in "rare cases" when an exemption might be needed. This May 26<sup>th</sup> Directive<sup>6</sup> also included instruction for BP to reduce the overall volume of dispersant by 75% from the maximum daily amount used (70,000 gallons per day) and to limit subsurface application to no more than 15,000 gallons per day. If BP wished to deviate from these instructions, it had to make such a request in writing and obtain approval from the Federal On-Scene Coordinator (FOSC, which is the USCG in this case).

An analysis of the exemption request letters submitted by both BP and Houma Unified Command,<sup>7</sup> as well as other documents provided to me by the USCG, reveals that since the Directive was issued on May 26<sup>th</sup>, more than 74 exemption requests have been submitted and, usually within the same day, approved by the USCG. On 5 separate occasions BP submitted requests for pre-authorized exemptions to deviate from EPA and USCG instructions by applying 6,000 gallons of dispersant per day to the ocean surface for an entire week, amounting to 35 days of pre-approved continuous use. In every instance this weekly request was approved by the USCG, and on many of these days, BP still used more than double its new 6,000 gallon limit.

Additionally, in more than one of the letters BP submitted requesting a week's worth of pre-approvals for surface dispersant use, BP contradicted information it submitted elsewhere regarding such use. For example, on June 16, BP COO Doug Suttles sent a letter to Rear Admiral James A. Watson, the Federal On-Scene Commander, requesting that BP be pre-authorized to use 6,000 gallons of surface dispersant per day for June 17-23. He indicated that the maximum daily application of surface dispersant for the days preceding June 16 was 3,360 gallons on June 12. However, an examination of the dispersant totals BP provided to Congressional staff recipients in its daily "Gulf of Mexico Oil Spill Response Updates" (see Table 1) indicates that on June 11, BP stated that it had applied 14,305 gallons of dispersant on the surface, on June 13, it stated that it had applied 36,000 gallons, and on June 14, 10,706 gallons. Additional similar discrepancies occur on multiple occasions. It is unclear whether the USCG made any attempt to verify the information BP provided in support of its requests.

<sup>4</sup> <http://globalwarming.house.gov/mediacenter/letters?id=0043>

<sup>5</sup> <http://www.epa.gov/bpspill/dispersants/directive-addendum2.pdf>

<sup>6</sup> <http://www.epa.gov/bpspill/dispersants/directive-addendum3.pdf>

<sup>7</sup> <http://www.deepwaterhorizonresponse.com/go/doctype/2931/57851/>

Furthermore, the justification provided by BP in making the exemption requests typically related to either the presence of volatile organic compound (VOC) emissions or to the presence of dispersible oil slicks, issues that were inherently and always present as a result of the constant flow of massive quantities of oil from the Deepwater Horizon well-head. Additionally, EPA raised concerns to the USCG about the frequency and incompleteness of these exemption requests, calling the approval process “pro-forma, and not as rigorous as EPA desires.” EPA also warned that the exemption requests do not meet the requirements of the May 26<sup>th</sup> Directive and that the exemptions should not “be presumed to be approved at the point they are submitted.”

In reviewing your response to my letter and the accompanying documents, it appears to me that the May 26, 2010 Directive has become more of a meaningless paperwork exercise than an attempt to abide by the Directive to eliminate surface application of chemical dispersants. I therefore request that you respond to the following questions:

1. Almost all of the exemption requests submitted by BP cite the presence of VOC emissions and large surface oil slicks as being reason for applying for an exemption to the May 26 Directive. Yet the Directive clearly states that an exemption should only be granted in “rare” circumstances. Why does the USCG believe that the presence of oil and VOCs are rare circumstances during a leak that releases tens of thousands of barrels of oil per day?
2. The exemption requests often also discuss the inadequacy of skimming operations as a rationale for the use of dispersants. Wouldn't skimming always be inadequate to fully combat such a large oil leak? Why are the inadequacies associated with skimming considered to be “rare” by the USCG?
3. In addition to the requests submitted by BP, from June 8-July 9 almost daily requests for exemptions to the May 26<sup>th</sup> Directive were submitted by Houma Unified Command, which consists of USCG and other personnel and reports to the Federal On Scene Coordinator. In most of the letters submitted by Houma Unified Command, the volume of dispersant requested was 3-6 times higher than the volume requested by BP. In each instance the request was approved by the Federal On Scene Coordinator, though at times the amount requested was modified
  - a. What is the relationship between BP and Houma Unified Command?
  - b. What is the relationship between the Federal On Scene Coordinator (USCG) and Houma Unified Command?
  - c. Does the fact that Houma Unified Command (which consists of USCG and other personnel), repeatedly requested and received permission from other USCG personnel to deviate from the USCG's own May 26 directive mean that the USCG effectively decided to ignore or simply not enforce its own directive? Why or why not?
  - d. Does the USCG Federal On Scene Coordinator take into consideration the volume of dispersant approved to be used by Houma Unified Command when approving the volume of dispersant requested by BP, and vice versa? If so, how, and if not, why not?

4. In 48 days, 74 requests for exemptions to the May 26 Directive were made by either BP, Houma Unified Command, or both. In all but 10 cases, the USCG approved the exemption without modifying the daily maximum quantities of dispersant use requested. In one of the 10 modifications occurring on June 26, the USCG actually increased the maximum dispersant that was approved for use by Houma Unified Command from its request of 30,600 gallons to 43,000 gallons.
  - a. How does the USCG evaluate whether the quantities of dispersant proposed are justified?
  - b. What criteria does the USCG use to evaluate whether the justification provided in an exemption request is sufficient to warrant an exemption?
  - c. What communication does the USCG have with other federal agencies, such as the EPA, when evaluating these requests and approving the exemptions?
5. From June 10–July 3, there were 8 days where the USCG substantially reduced the requested dispersant exemption volume. For example, on June 10, Houma Unified Command requested permission to apply up to 32,000 gallons, which was reduced to 21,000 gallons by the USCG. Similarly on June 12, the request to use 38,160 gallons was reduced to 7,000 gallons by the USCG. But the next day, on June 13, Houma Unified Command requested permission and was approved to apply up to 36,000 gallons of dispersant on the surface of the Gulf.
  - a. Why did the USCG reject the requests on June 10 and 12, and then approve essentially the same request on June 13?
  - b. How does the USCG determine the maximum amount of dispersant use that is justified to be used on any particular day?
  - c. Does the USCG take into consideration previous approvals when deciding whether a daily exemption is to be granted? How does the presence of inclement weather factor into the process when deciding if an exemption request should be approved?
6. In several instances BP submitted advance requests for permission to apply 6,000 gallons per day of dispersant to the ocean surface for seven days, with a caveat that this limit might also be exceeded as required. The USCG approved these requests, essentially allowing BP to use as much surface dispersant as it wanted to. In fact, on June 4 and again on June 11, 16, 17, 20 and July 1 BP roughly doubled the 6,000 gallon maximum 'limit' (for example, according to materials provided by BP to Congressional staff, on June 4<sup>th</sup>, BP applied 13,701 gallons, and on June 11<sup>th</sup> BP applied 14,305 gallons).
  - a. Why did the USCG approve a request that essentially gave BP permission to use as much dispersant as it wanted to for a 7 day period?
  - b. Did the USCG take into account the actual volume of dispersants that were used when deciding if subsequent exemptions would be approved? If so, how? If not, why not?
  - c. How were decisions about volume of dispersants in excess of the maximum exception made? Did BP inform the USCG in advance of exceeding the 6,000 gallon limit on any date on which it significantly exceeded the 6,000 gallon limit that it planned to do so, and how much it would likely apply on those days? If so,

did the USCG approve the use of such high volumes? Please provide all documents, including phone logs and emails, related to BP's surface application of dispersants on each day that BP significantly exceeded the 6,000 gallon limit (at minimum for its use of surface dispersants on June 1, 4, 11, 13, 14, 16, 17, 20, 21, and July 1).

- d. How did the USCG respond to information indicating that BP violated the already-exempted Directive by exceeding the recommended maximum daily volumes to be used?
7. BP has also contradicted information it submitted elsewhere regarding its use of surface dispersants. On June 16, BP COO Doug Suttles sent a letter to Rear Admiral James A. Watson, the Federal On-Scene Commander, requesting that BP be pre-authorized to use 6,000 gallons of surface dispersant per day for June 17-23. He indicated that the maximum daily application of surface dispersant in the days preceding June 16 was 3,360 gallons on June 12. However, an examination of the amounts BP provided to Congressional recipients in its daily "Gulf of Mexico Oil Spill Response Updates" (see Table 1) indicates that on June 11, BP stated that it had applied 14,305 gallons of dispersant on the surface, on June 13, it had applied 36,000 gallons and on June 14, 10,706 gallons. On June 22, BP COO Doug Suttles sent a letter to Rear Admiral James A. Watson requesting that BP be pre-authorized to use 6,000 gallons of surface dispersant per day for June 24-30. In the letter, Mr. Suttles claimed that from June 17-21, the average daily volume applied to the surface was about 2,200 gallons with a maximum of 5,776 gallons on June 19. However, an examination of the surface dispersant totals BP provided to Congressional recipients in its daily "Gulf of Mexico Oil Spill Response Updates" (see Table 1) indicates that on June 17, BP applied 12,423 gallons on the surface, on June 20, it applied 19,576 gallons, and on June 21, it applied 11,217 gallons. On July 5, 2010, Mr. Suttles claimed that the maximum surface dispersant applied from July 1-5 was 1,473 gallons, yet on July 1 BP provided an amount of 17,852 gallons to Congress.
    - a. How did the USCG verify the information provided to it by BP, since that information is so clearly at odds with the volumes of surface dispersants that BP has informed Congress that it used?
    - b. Has the USCG ever attempted to verify the information provided to it by BP related to the amounts of dispersants that were actually applied? If so, please provide all such documentation. If not, why not?
    - c. Was BP providing inaccurate information to the USCG or to the Congress? If neither, then how do you account for these discrepancies?
  8. Table 1 contains daily information related to the amount of surface dispersants requested to be applied by both BP and Houma Unified Command, how much was approved by the USCG, and available information provided by BP and the Deepwater Horizon National Incident Command as to how much was actually used. As you can see, the totals do not add up; for example, on June 13, BP states that it used 36,000 gallons on the surface, but the Deepwater Horizon total cites only 13,000 gallons. What totals do the Deepwater Horizon amounts refer to? Do they include the BP totals? How do you explain the discrepancies associated with the daily reported amounts?

9. On May 30, 2010 BP requested and received retroactive authorization for surface dispersant application that occurred on May 28 without prior USCG approval. On June 6, BP requested and received retroactive authorization for exceeding the maximum daily amount of subsurface dispersant (15,000 gallons) on two separate occasions.
  - a. Has the USCG determined why BP failed to obtain advance authorization for the use of dispersants on these occasions?
  - b. Why did the USCG decide to make these retroactive authorizations?
  - c. What is the point of issuing a Directive requiring advance authorization prior to the use of surface dispersants if the USCG just issues retroactive authorizations in instances in which BP has failed to obtain the requisite advance authorization?
10. On June 4, the USCG approved a BP exemption request to apply 23,000 gallons of dispersant subsurface at the site of the well head. This request was made because it was in excess of the May 26th Directive that set the maximum daily limit for subsurface application of dispersants at 15,000 gallons per day. The reason for this exemption approval was noted to be a result of placement of the containment cap, which disrupted dispersant flow. On June 19, another exemption request for subsurface application was submitted; this request was approved without an upper limit for application. BP's rationale for an increase in subsurface application was because of high VOC emissions at the surface.
  - a. Why did the USCG approve this June 19<sup>th</sup> request without an upper limit?
  - b. Why are VOC emissions considered to be an acceptable rationale for approval of both an increase in subsurface and surface use of dispersants?
  - c. How did the USCG calculate whether the proposed volume increase requested by BP for subsurface application was justified? For example, what flow rate assumptions did BP and the USCG use to determine these volumes and on what basis were those assumptions made?
  - d. On June 19, the USCG approved a surface exemption request made by BP and a separate request made by Houma Unified Command, totaling 22,400 gallons of surface dispersant. That same day, USCG also approved a subsurface exemption request with no upper limit on volume. Did the USCG take into consideration surface application of dispersants when approving requests for subsurface application? If so, please describe the process for such consideration, and if not, why not?
11. On June 22, 2010, in response to a letter received from the Houma Incident Commander, the USCG wrote to the Regional Response Team, which is comprised of representatives from sixteen federal departments, requesting that a new Directive on the dispersant approval process be developed to supersede the May 26<sup>th</sup> Directive. This new Directive was supposed to allow "real-time decisions" to be made regarding the volume of dispersants used and "should in no way condition the use of dispersants on precise data" regarding capability of other mitigating methods. In response to this request the EPA Region 6 proposed a new dispersant deployment procedure which included review and approval by EPA prior to dispersant deployment.

- a. Did the USCG request this new Directive because it was concerned that the old Directive to approve changes only in "rare" circumstances was consistently being violated? If not, why was the new Directive requested?
- b. On or around June 24, Houma Unified Command evidently requested pre-approval to apply 5,000 gallons of dispersant on the surface per day going forward. A memo from EPA's Samuel Coleman initially concurred with the request, but a second memo subsequently rescinded the concurrence and instead proposed an alternate process which required review and concurrence by EPA. What was the resolution of this matter? Please provide all documents, including phone logs and emails, related to the process by which approvals to use surface dispersants by Houma Unified Command occurred.
- c. Was the EPA procedure for dispersant approval proposed in lieu of the USCG proposal adopted? If yes, why wasn't this Addendum made public on the EPA and USCG's website as an Addendum to the May 26<sup>th</sup> Directive? If not, why not, and was the new Directive suggested by the USCG adopted instead?
- d. Did any other Regional Response Team members provide an alternate Addendum proposal? If so, please provide all documentation thereof.
- e. Please provide all documents, including phone logs and emails, related to the USCG request to develop a new Addendum to address the dispersant approval process.

Thank you for your assistance and cooperation in responding to this request. The Subcommittee requests that a full and complete response to this inquiry be provided within 15 working days, or no later than close of business, August 20, 2010. If the USCG is unable to comply with this deadline, I request that you submit an interim response by that date responding to the questions that you are able to answer and setting forth a firm deadline for the submission of a full and complete response to the Subcommittee's inquiry. Please contact Dr. Michal Freedhoff of the Energy and Environment Subcommittee staff or Dr. Avenel Joseph of my staff at 202-225-2836 if you should have any questions.

Sincerely,

  
Edward J. Markey

Chairman

Subcommittee on Energy and Environment

- cc. The Honorable Henry A. Waxman  
Chairman, House Energy and Commerce Committee
- The Honorable Joe Barton  
Ranking Member, House Energy and Commerce Committee
- The Honorable Fred Upton  
Ranking Member  
Subcommittee on Energy and Environment



**TABLE 1**  
**REQUESTS FROM BP AND HOUMA UNIFIED COMMAND TO USE SURFACE**  
**DISPERSANTS WERE ALMOST ALWAYS GRANTED BY THE UNITED STATES**  
**COAST GUARD**

This table does not include amounts requested to test different ways to apply dispersants

| DATE   | Volume Requested by BP (gallons) | Volume Approved by CG for BP (gallons) | Volume Requested by Houma Unified Command (gallons) | Volume Approved by CG for Houma Unified Command (gallons) | Total Volume Approved (gallons) | Total BP Volume Used (gallons) | Deepwater Horizon Reported Volume Used (gallons) |
|--------|----------------------------------|--|---|---|---------------------------------|--------------------------------|--|
| 28-May | 15,000                           | 15,000                                 | none  | none  | 15,000                          | 6,400                          | 20,000   |
| 29-May | 6000+19000                       | 6000+19000                             | none  | none  | 25,000                          | N/R                            | 0  |
| 30-May | 19000+6000                       | 19000+6000                             | none  | none  | 25,000                          | N/R                            | 0  |
| 31-May | 19000+6000                       | 19000+6000                             | none  | none  | 25,000                          | N/R                            | 20,000   |
| 1-Jun  | 6,000                            | 6,000                                  | none  | none  | 6,000                           | 11,686                         | 15,000   |
| 2-Jun  | 6,000                            | 6,000                                  | none  | none  | 6,000                           | 3,000                          | 0  |
| 3-Jun  | 6000+2000                        | 6000+2000                              | none  | none  | 8,000                           | 3,000                          | 4,000  |
| 4-Jun  | 6000+2000                        | 6000+2000                              | none  | none  | 8,000                           | 13,701                         | 6,000  |
| 5-Jun  | 6000+2000                        | 6000+2000                              | none  | none  | 8,000                           | N/R                            | 14,000   |
| 6-Jun  | 6000+2000                        | 6000+2000                              | none  | none  | 8,000                           | N/R                            | 0  |
| 7-Jun  | 6000+32000                       | 6,000                                  | none  | none  | 6,000                           | 4,000                          | 0  |
| 8-Jun  | 6,000                            | 6,000                                  | 32,000  | 32,000  | 38,000                          | N/R                            | 11,000   |
| 9-Jun  | 6,000                            | 6,000                                  | none  | none  | 6,000                           | 2,100                          | 0  |
| 10-Jun | 6,000                            | 6,000                                  | 32,000  | 21,000  | 27,000                          | 1,366                          | 10,000   |
| 11-Jun | 6,000                            | 6,000                                  | 15,300  | 15,300  | 21,300                          | 14,305                         | 0  |
| 12-Jun | 6,000                            | 6,000                                  | 38,160  | 7,000   | 13,000                          | N/R                            | 20,000   |
| 13-Jun | 6,000                            | 6,000                                  | 36,000  | 36,000  | 42,000                          | 36,000                         | 13,000   |
| 14-Jun | 6,000                            | 6,000                                  | 38,880  | 17,800  | 23,800                          | 10,706                         | 37,000   |
| 15-Jun | 6,000                            | 6,000                                  | 23,000  | 23,000  | 29,000                          | N/R                            | 12,000   |
| 16-Jun | 6,000                            | 6,000                                  | 27,700  | 27,700  | 33,700                          | 13,593                         | 3,000  |
| 17-Jun | 6,000                            | 6,000                                  | 25,800  | 18,700  | 24,700                          | 12,423                         | 18,000   |
| 18-Jun | 6,000                            | 6,000                                  | 21,000  | 19,200  | 25,200                          | N/R                            | 12,000   |
| 19-Jun | 6,000                            | 6,000                                  | 16,400  | 16,400  | 22,400                          | 5,776                          | 16,000   |
| 20-Jun | 6,000                            | 6,000                                  | 15,500  | 15,500  | 21,500                          | 19,576                         | 8,000  |
| 21-Jun | 6,000                            | 6,000                                  | 22,600  | 22,600  | 28,600                          | 11,217                         | 20,000   |
| 22-Jun | 6,000                            | 6,000                                  | none  | none  | 6,000                           | 2,008                          | 11,000   |
| 23-Jun | 6,000                            | 6,000                                  | 10,000  | 10,000  | 16,000                          | 5,099                          | 2,000  |
| 24-Jun | 6,000                            | 6,000                                  | 22,400  | 22,400  | 28,400                          | N/R                            | 5,000  |
| 25-Jun | 6,000                            | 6,000                                  | 28,200  | 14,400  | 20,400                          | N/R                            | 21,000   |
| 26-Jun | 6,000                            | 6,000                                  | 30,600  | 43,000  | 49,000                          | N/R                            | 2,000  |
| 27-Jun | 6,000                            | 6,000                                  | 50,600  | 10,880  | 16,880                          | N/R                            | 0  |
| 28-Jun | 6,000                            | 6,000                                  | bad weather   | bad weather   | 6,000                           | 0                              | 30,000   |
| 29-Jun | 6,000                            | 6,000                                  | no max  | no max  | 6,000                           | 0                              | 0  |
| 30-Jun | 6,000                            | 6,000                                  | 10,000  | 10,000  | 16,000                          | 0                              | 0  |
| 1-Jul  | 6,000                            | 6,000                                  | no max  | no max  | 6,000                           | 17,852                         | 0  |
| 2-Jul  | 6,000                            | 6,000                                  | 20,000  | 20,000  | 26,000                          | 1,473                          | 20,000   |
| 3-Jul  | 6,000                            | 6,000                                  | 60,000  | 20,000  | 26,000                          | N/R                            | 12,737   |
| 4-Jul  | 6,000                            | 6,000                                  | 10,000  | 10,000  | 16,000                          | N/R                            | 0  |

|        |       |       |        |        |        |       |        |
|--------|-------|-------|--------|--------|--------|-------|--------|
| 5-Jul  | 6,000 | 6,000 | none   | none   | 6,000  | 803   | 10,000 |
| 6-Jul  | 6,000 | 6,000 | none   | none   | 6,000  | 473   | 0      |
| 7-Jul  | 6,000 | 6,000 | none   | none   | 6,000  | 1,245 | 0      |
| 8-Jul  | 6,000 | 6,000 | 10,000 | 10,000 | 16,000 | 0     | 0      |
| 9-Jul  | 6,000 | 6,000 | 10,000 | 10,000 | 16,000 | N/R   | 0      |
| 10-Jul | 6,000 | 6,000 | none   | none   | 6,000  | N/R   | 0      |
| 11-Jul | 6,000 | 6,000 | none   | none   | 6,000  | 0     | 0      |
| 12-Jul | 6,000 | 6,000 | none   | none   | 6,000  | N/R   | 0      |
| 13-Jul | 6,000 | 6,000 | none   | none   | 6,000  | 999   | 0      |
| 14-Jul | 6,000 | 6,000 | none   | none   | 6,000  | 0     | 0      |

#### SOURCES

Volumes Requested by BP and Houma Unified Command: Deepwater Horizon Website and Correspondence from the United States Coast Guard to Rep. Edward J. Markey

Volumes Approved by the United States Coast Guard: Deepwater Horizon Website and Correspondence from the United States Coast Guard to Rep. Edward J. Markey

Total BP Volume Used: BP Gulf of Mexico Updates sent by BP to Congressional staff, and Correspondence from the United States Coast Guard to Rep. Edward J. Markey. N/R = not reported

Total Deepwater Horizon Volume Used: Ongoing Administration-Wide Response to the Deepwater Horizon Oil-Spill



National Incident Commander  
Deepwater Horizon Response

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16451

AUG 2 0 2010

The Honorable Chairman Edward J. Markey  
Subcommittee on Energy and Environment  
2125 Rayburn House Office Building  
Washington, DC 20515-6115

Dear Chairman Markey:

I am providing a preliminary response to your July 30, 2010 letter inquiring about our reasoning in authorizing the use of dispersants during the Deepwater Horizon oil spill response.

As you are aware, no new oil from the Macondo 252 well has entered the Gulf since the capping of the well on July 15, 2010 and we have not used dispersants since July 19, 2010. With the well capped and the imminent completion of the "bottom kill" operation, we do not currently plan to apply dispersants again in this response. To best answer your questions about our previous use of dispersants, I will discuss the facts and considerations that the Federal On Scene Coordinator (FOSC) weighed in authorizing their use, both before and after issuing Addendum III to the Dispersant Monitoring and Assessment Directive ("Addendum III").

#### **Protecting Shores from Oil is a Priority**

From the beginning of the response, the Deepwater Horizon Unified Command placed the highest priority on the prevention of oil impacts to the ecological and economically sensitive Gulf Coast shoreline. Shrimp, fish and other species either live in or spend critical developmental periods of their lifecycles in the swamps and marshes. The preservation of these marshes is critical to both the ecological diversity of the Gulf of Mexico and the preservation of its fisheries. In addition, we placed a priority on minimizing impacts to the pristine beaches which are a major source of tourism revenue for these five states.

#### **Dispersants are an Effective Back-up to Collection, Skimming and In-situ Burning**

Dispersants were one of several tools for preventing oil from impacting the shore. The Unified Command used subsea collection, surface collection (skimming), in-situ burning and booming to prevent oil from reaching the shore. But the effectiveness of each collection method depends upon the weather, sea state and the condition of the oil to be collected. For example, oil which has been in the water for a significant period of time is not suitable for in-situ burning. Neither skimming nor in situ burning are effective when the sea state is particularly rough. The effectiveness of dispersants increases as sea states increase. When in-situ burning and skimming were ineffective or not practicable due to weather or sea state, dispersants were used as an adaptable management strategy during these periods. Because the oil flowed 24 hours a day, the FOSC assessed the daily conditions and determined the most effective response techniques and tools to deploy each day and the use of dispersants was considered as part of this assessment. All FOSC dispersant use decisions were made with the concurrence of or in consultation with the EPA, natural resource trustees from the Department of the Interior (DOI), Department of Commerce (DOC) and the State of Louisiana as required by 40 CFR 300.910 and the Regional Response Team VI guidelines.

Scientific consensus supports the effectiveness and appropriateness of chemical dispersants. By breaking the oil into tiny droplets, natural biological processes are better able to break down the oil. The 2005 National Research Council (NRC) report "Oil Spill Dispersants: Efficacy and Effects," concluded that the potential acute lethal toxicity of chemically dispersed oil is primarily associated with the dispersed oil and dissolved oil constituents following dispersion and not with the current generation of dispersants themselves.

Recent scientific studies by the EPA & FDA suggest that the use of dispersants on the oil is less harmful than the oil alone. On August 1, 2010, EPA announced that they had completed the second phase of dispersant testing to assess the acute toxicity of multiple concentrations of Louisiana Sweet Crude Oil alone, and combinations of this oil with each of the eight dispersants on the National Contingency Plan Product Schedule. The results indicated that the eight dispersants tested are similar to one another based on standard toxicity tests on sensitive aquatic organisms found in the Gulf. These results confirm that the dispersant used in response to the oil spill in the Gulf, Corexit 9500A, is generally no more or less toxic than the other available alternatives. In addition, the EPA found that oil alone was more toxic to mysid shrimp than the eight dispersants when tested alone. Previous EPA testing indicated that none of the eight dispersants (including Corexit 9500A) displayed biologically significant endocrine disrupting activity. Additionally, the FDA has determined that the chemical dispersants used to combat the Deepwater Horizon oil spill have a low potential for bioconcentration in seafood species. The decision to use dispersants was never undertaken lightly. In this case there was an environmental trade-off; the known harm of oil to the environmentally sensitive marsh habitat outweighed the potential harm that might be caused by the use of dispersants off shore in the marine benthic environment. Again these decisions were made in full consultation and concurrence with the EPA, DOC, and DOI.

#### **Dispersants Were Only Used when Necessary**

Even prior to Addendum III, dispersants were used only when considered necessary. Our decision to use dispersants was triggered by the need to control the amount of Volatile Organic Compounds (VOCs) at the well site for the safety of the workers drilling the relief well and to disperse oil when other recovery methods were insufficient or ineffective. The quantity of dispersant used was decided based upon known properties of oil and dispersant. Responders would estimate the quantity of oil they observed at a site and then estimate the amount of dispersant to use based upon an established formula of 1 gallon of dispersant for 20 gallons of oil. The FOSC would be briefed on this information and would approve or disapprove the applications as appropriate.

Our top operational priority has always been to ensure the safety and welfare of citizens and response personnel. As you are aware, VOCs pose both short and long-term health impacts to individuals exposed to them. For most spills, VOCs quickly disperse through natural processes. But in this spill, VOCs at the source control site were constantly refreshed by new oil flowing out of the well. VOC levels did not begin to dissipate until the cap was installed making elevated VOC levels a continuous problem as responders attempted to control the source of the spill. In order to ensure the safety of the response personnel, it was necessary to use dispersants at the site of the source of the oil.

When levels are too high to minimize the health risks to workers who are exposed to VOCs, workplace-safety regulations require that workers must wear personal protective equipment (PPE).

However, the use of masks and other PPE in the extreme high heat and humidity of the Gulf significantly increased the risk of heat related injuries to the more than 1,400 workers at the source control site. Because of the hazards from the VOCs, it was important to keep the concentration of VOCs low at the source site. The application of dispersants in the subsurface and by surface vessels at the site enabled safe source control operations by dramatically reducing the concentration of VOCs as detailed in pages 6-7 of enclosure (1).

Away from the source control site, aerial dispersants were used when other methods were not suitable or available for recovering the oil away from sensitive shoreline areas. Enclosures 2-7 are examples of the Dispersant Use Requests which provide specific examples of the factors which led to the selection of aerial dispersants for each application. In general, the factors that the FOSC considered in choosing to deploy aerial dispersants included the broad size of the spill (as much as 7,200 square miles), the geographical distribution of the various oil slicks, and the on-scene weather.

#### **Source Control Vessel Dispersant Use was Authorized Separately from Aerial Dispersant Use.**

Authorization to use "source control vessel" (SCV) dispersants was requested separately from authorization for aerial dispersants. SCVs deployed surface dispersants only at the well site and only for VOC control as discussed above. That activity is recorded separately from other surface dispersants used because the circumstances of dispersant application were different. Surface dispersant application by vessels at the well site was necessary because the high concentration of vessels and platforms made aerial application unsafe. The Responsible Party's June 16, 2010, letter regarding SCV dispersant use for the week of June 17-23<sup>rd</sup> (enclosure 8) requests permission to deploy up to 6,000 gallons per day at the well site, and states that the maximum amount used in the previous week was 3,360 gallons on June 12<sup>th</sup>. This authorization was a separate authorization to control VOCs and was independent of the authorization to deploy aerial dispersants in other parts of the response area as a response measure. The authorization to deploy aerial dispersants on those days is detailed in separate letters on June 10 (two letters), 12, 13, 14, and 15<sup>th</sup>. Table 1, below, summarizes authorized and actual use of source and aerial dispersants for the week of Jun 10-16, 2010.

**Table 1**

| Date dispersant applied | SCV authorized (gal) | SCV Used (gal) | Aerial Authorized (gal) | Aerial Used (gal) |
|-------------------------|----------------------|----------------|-------------------------|-------------------|
| June 10                 | 6,000                | 1,366          | 21,000*                 | 4,506             |
| June 11                 | 6,000                | 0              | 15,300                  | 14,305            |
| June 12                 | 6,000                | 3,360          | 7,000**                 | 6,996             |
| June 13                 | 6,000                | 800            | 36,000                  | 35,212            |
| June 14                 | 6,000                | 35             | 17,800***               | 10,703            |
| June 15                 | 6,000                | 160            | 23,000                  | 2,608             |
| June 16                 | 6,000                | 213            | 27,700                  | 13,380            |

\*32,000 gallons requested

\*\* 38,160 gallons requested

\*\*\*38,880 gallons requested

#### **Subsea Dispersant Varied in Response to Necessity**

Your letter requested information regarding two occasions where the FOSC varied from established subsea dispersant application levels. On June 4, the placement of the Lower Marine Riser Package (LMRP) cap disrupted the regular subsea application of dispersants and resulted in the dispersant deployment wand being moved to a non-optimal position. In addition, there was an increased flow from the well head after the riser was cut and as a result, VOC emissions at the source increased to hazardous levels. To reduce VOCs, BP requested and was granted authorization to increase subsea dispersant application to 23,000 gallons for June 4, 2010, via letter dated June 4, 2010. (Enclosure 9)

Between 2100 and 2400 hours on June 18<sup>th</sup>, site safety monitors at the well site recorded an increase in VOCs. On June 19<sup>th</sup>, the FOSC authorized BP to increase subsea dispersant use to 15 gallons per minute which equates to 21,600 gallons over 24 hours. (Enclosure 10) On June 19<sup>th</sup>, 17,780 gallons of dispersant were applied and VOCs were reduced to safe working levels. Once VOCs were effectively controlled, subsea application was decreased to within the authorized level (<15,000 gallons/ day) on June 20<sup>th</sup>.

#### **Addendum III significantly reduced the amount of Aerial Dispersants Used.**

Once Addendum III was in place, the FOSC significantly reduced the amount of dispersants used. During this time, the average amount of total dispersants used in all applications (subsea, source and aerial) dropped 28%; from 26,358 gallons to 19,097 gallons on days where dispersants were deployed.

The most dramatic decrease was in aerial application. Prior to Addendum III, (between April 21st and May 26<sup>th</sup>), dispersants were used on 28 of 35 days (80%), with an average daily application of 24,386 gallons. Between May 27<sup>th</sup> and July 19<sup>th</sup>, dispersants were used on 33 of 54 days (61%), with an average daily application of 8,892 gallons, a 64% reduction in amount applied.

Although source application of dispersants was governed by the level of VOCs at the source and the protection of responders at the well site, Addendum III still resulted in a reduction in the total amount of dispersants applied. Following the issuance of Addendum III, the amount of dispersants used per application was reduced 55% (from a daily average of 5,046 gallons to 2,276 gallons).

In the period following Addendum III, the average daily amount of subsea dispersant applied did increase 12%, from 10,553 gallons to 12,041 gallons. But subsea dispersant is directly correlated with VOC levels at the well site, and these actions were taken for worker safety. The FOSC worked with BP to ensure that subsea dispersant levels were kept at the lowest level necessary.

Significant dispersant operations ended on 15 July 2010 with the capping of the well. The last dispersant application was 200 gallons on 19 July 2010.

We will provide additional information via separate correspondence no later than October 1, 2010.  
In the interim, we are happy to meet with your staff to answer any questions you may have.

Sincerely,

A handwritten signature in black ink, appearing to read 'T. W. Allen', with a stylized, flowing script.

T. W. ALLEN  
Admiral, U. S. Coast Guard (Ret.)  
National Incident Commander

Enclosures: (1) Dispersant Usage Summary  
(2) Dispersant Use Request and Authorization June 10, 2010  
(3) Dispersant Use Request and Authorization June 11, 2010  
(4) Dispersant Use Request and Authorization June 12, 2010  
(5) Dispersant Use Request and Authorization June 13, 2010  
(6) Dispersant Use Request and Authorization June 14, 2010  
(7) Dispersant Use Request and Authorization June 15, 2010  
(8) Weekly Source Control Surface Dispersant Plan (June 10 through 16, 2010)  
(9) June 4, 2010 Source Control Special Dispersant Request and Approval  
(10) June 19, 2010 Source Control Special Dispersant Request and Approval  
(11) June 15, 2010 Aerial Dispersant Plan Request and Approval  
(12) Daily Dispersant Use Data

Deepwater Horizon Response  
Dispersant Application

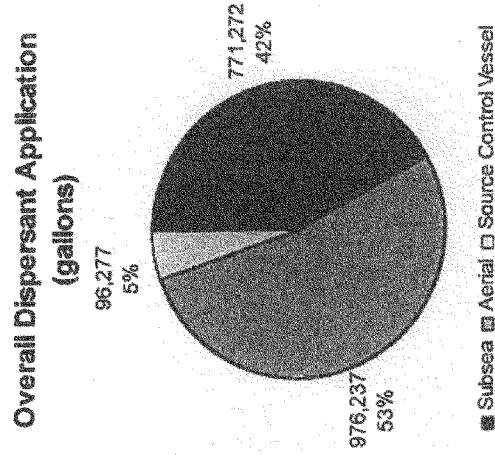
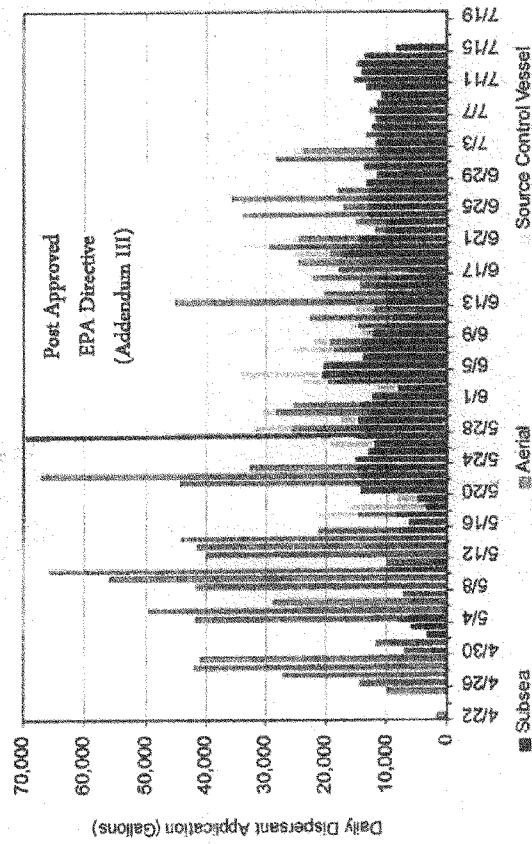
August 7, 2010

ENCLOSURE I



# Cumulative Dispersant Application

Deepwater Horizon Response

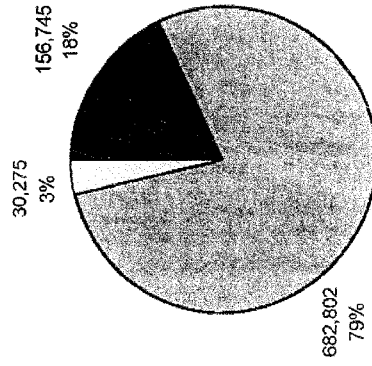


\* 1,843,786 gallons of dispersant have been applied throughout the response

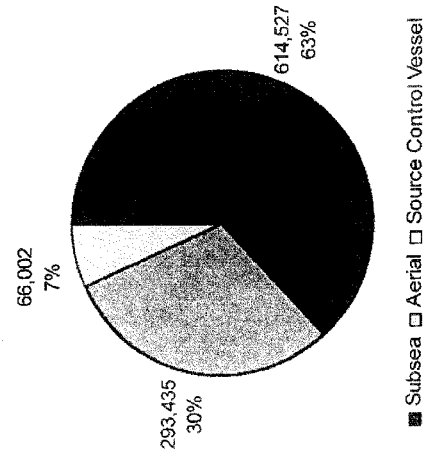
## Dispersant Application over Time

Deepwater Horizon Response

**April 21 - May 26 Dispersant Application (gallons)**



**May 27 - July 19 Dispersant Application (gallons)**

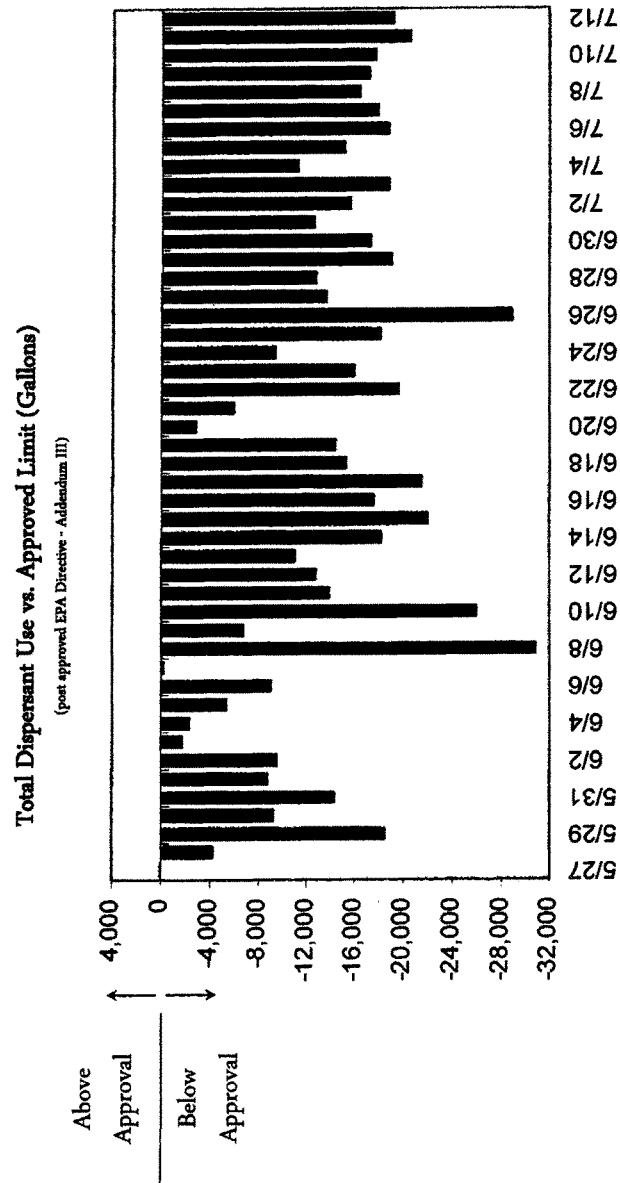


■ Subsea □ Aerial □ Source Control Vessel

■ Subsea □ Aerial □ Source Control Vessel

- Significant reduction in aerial dispersant application as a result of the May 26, 2010 Addendum III to the Dispersant Monitoring and Assessment Directive
- April 21 to May 26 applied 869,822 gallons over 33 days (26,358 gallons per day)
- May 27 to July 19 applied 973,964 gallons over 51 days (19,097 gallons per day)

# Approved and Actual Daily Dispersant Deepwater Horizon Response



- Received approval for approximately 1.6 million gallons between May 27<sup>th</sup> and July 12<sup>th</sup>
- Actual usage was 936,631 gallons

# Average Dispersant Application

Deepwater Horizon Response

| Subsea                    |                      |                     |                      |                            |
|---------------------------|----------------------|---------------------|----------------------|----------------------------|
| Dates                     | Volume Applied (gal) | Days of Application | Average when Applied | Percentage of Days Applied |
| Entire Response           | 771,272              | 68                  | 11,342               | 76%                        |
| Apr 22 - May 26 (35 days) | 156,745              | 18                  | 8,708                | 51%                        |
| May 27 - Jul 18 (54 days) | 614,527              | 50                  | 12,291               | 93%                        |

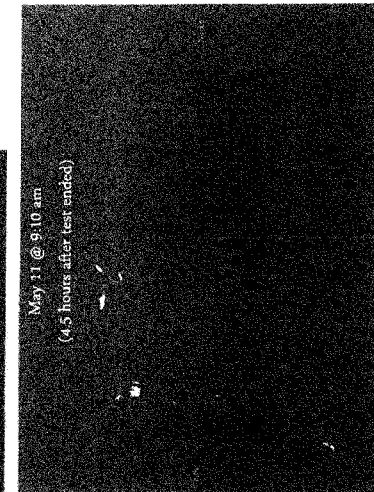
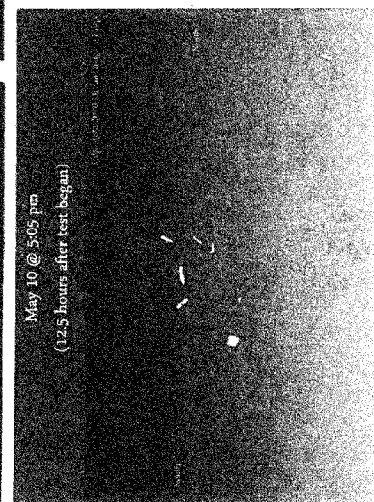
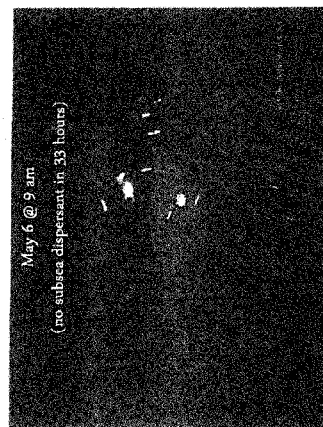
| Aerial                    |                      |                     |                      |                            |
|---------------------------|----------------------|---------------------|----------------------|----------------------------|
| Dates                     | Volume Applied (gal) | Days of Application | Average when Applied | Percentage of Days Applied |
| Entire Response           | 976,237              | 61                  | 16,004               | 69%                        |
| Apr 22 - May 26 (35 days) | 682,802              | 28                  | 24,386               | 80%                        |
| May 27 - Jul 19 (54 days) | 293,435              | 33                  | 8,892                | 61%                        |

| Source Control Vessel     |                      |                     |                      |                            |
|---------------------------|----------------------|---------------------|----------------------|----------------------------|
| Dates                     | Volume Applied (gal) | Days of Application | Average when Applied | Percentage of Days Applied |
| Entire Response           | 96,277               | 35                  | 2,751                | 39%                        |
| Apr 22 - May 26 (35 days) | 30,275               | 6                   | 5,046                | 17%                        |
| May 27 - Jul 19 (54 days) | 66,002               | 29                  | 2,276                | 54%                        |

| Total                     |                      |                     |                      |                            |
|---------------------------|----------------------|---------------------|----------------------|----------------------------|
| Dates                     | Volume Applied (gal) | Days of Application | Average when Applied | Percentage of Days Applied |
| Entire Response           | 1,843,796            | 84                  | 21,960               | 94%                        |
| Apr 22 - May 26 (35 days) | 869,822              | 33                  | 26,358               | 94%                        |
| May 27 - Jul 19 (54 days) | 973,964              | 51                  | 19,097               | 94%                        |

# Effectiveness of Subsea Dispersant

## Deepwater Horizon Response

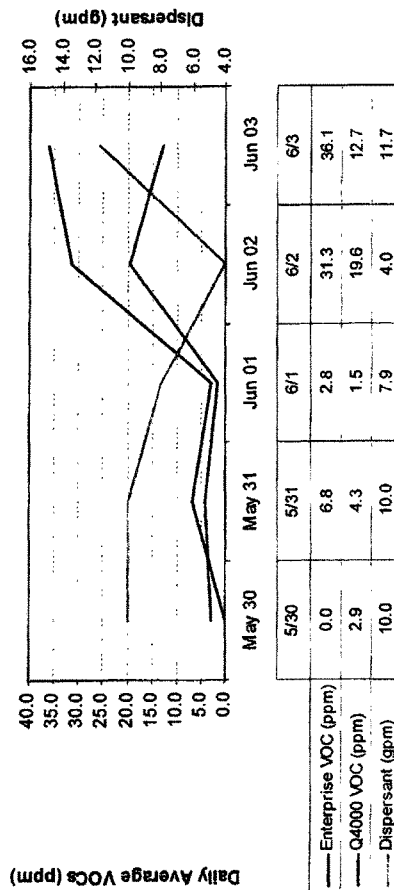


- Visual images at the source before and after the 3<sup>rd</sup> subsea dispersant test on May 10<sup>th</sup>
- Pumped 10 gpm of dispersant for 24 hours beginning May 10<sup>th</sup> at 4:30 am
- Total dispersant applied of 11,560 gallons

# Effectiveness of Subsea Dispersant

Deepwater Horizon Response

Relationship Between VOCs and Subsea Dispersant



|                          | Number of<br>Sample | 4 hr avg. dispersant<br>rate (4 hrs prior) |                      | Number of<br>Samples | 4 hr avg. dispersant<br>rate (4 hrs prior) |
|--------------------------|---------------------|--|----------------------|----------------------|--|
| Enterprise (<25 ppm)     | 106                 | 9.1  | Q-4000 (<25 ppm)     | 106                  | 9.1  |
| Enterprise (25 - 70 ppm) | 5                   | 1.8  | Q-4000 (25 - 70 ppm) | 5                    | 1.8  |
| Enterprise (>70 ppm)     | 6                   | 5.6  | Q-4000 (>70 ppm)     | 1                    | 0.9  |
| Total                    | 117                 | 8.7  | Total                | 112                  | 8.7  |

- Dispersant application used to mitigate VOC concentration at surface
- Data from Enterprise and Q-4000, located at Source from May 30 to June 3

James A. Watson  
Rear Admiral, USCG  
Federal On-Scene Coordinator

June 9, 2010

Gov letter dated June 10.

For 10th

Dear Admiral Watson:

In compliance with the May 26, 2010, Dispersant Monitoring and Assessment Directive - Addendum 3 (the "Directive"), Houma Unified Command has eliminated the surface application of dispersants, except in cases where an exemption is requested and justified, and approved by the Federal On-Scene Coordinator.

Houma Unified Command has ten (10) spotter visual reports from 9 June of multiple slicks of dispersible oil (Attachment 1) and the NOAA Surface Oil Forecast for 10 June shows extensive areas of heavy and medium oil (Attachment 2). Weather forecast indicates excellent flying weather with winds of 8-10 knots, wave height 1.5'-2.5', ceilings unlimited and visibility 10 nm.

Houma Unified Command anticipates that, due to the weather, location, distribution (8,100 sqmi) and size of the multiple oil slicks identified (180 sqmi), the use of mechanical recovery and ISB to recover or remove the oil in the target area will be insufficient to remove the spill volume on June 10, 2010. Prior to spray operations the spotter aircraft will identify the highest value targeted slicks and will direct spray aircraft to the heaviest portions of the slick.

Pursuant to a request this date from Unified Area Command, the following information is provided.

- Include physical dimensions of identified targets proposed: this information is included in Table A and given in approximate acreage and average length and width perimeter dimensions.
- Explicit justification for why these targets can't be skimmed or addressed by other mechanical means: The use of mechanical recovery to recover or remove the oil in the identified target areas will be insufficient to remove the estimated dispersible oil volumes that we have estimated for June 10, 2010. The targeted oil herein is dispersible oil and dispersible oil is not the only oil demanding mechanical recovery assets. The geographic area of the spill site contains a combination of dispersible oil, heavy sheens and emulsified oil. Mechanical recovery devices are required elsewhere in the entire geographic area to address all areas and all oils that can be recovered mechanically and not just the dispersible oils and are therefore otherwise engaged.

ENCLOSURE 2

- ## Offshore Skimming Resources

The document is a large, rectangular page that is almost entirely blacked out. At the bottom, there is a small section of text that appears to be a table or a list of items, but it is mostly illegible due to the heavy redaction.



[illegible][illegible]

- How we intend to sample water following application to test for effects such as toxicity and conduct SMART Tier III monitoring/sampling: **The NOAA SSC, Mr. Ed Levine has advised that the RRT has agreed as follows; "The agreement was to do Tier I and the traditional Tier 2/3 monitoring until the IP could go out and then switch to just Tier I and the IP."** The IP (M/V International Peace) will implement the "Surface Water Sampling Plan for Dispersant Application Monitoring", Version 1, approved on June 3, 2010 by Ron Dipbo, Environmental Unit Leader; Mike Utsler, BP IC, Jerome Zeringue, SOSOC and Captain Merideth, FOSC. Exponent and OSR personnel will be the onboard science team. Accommodations will be available for two Federal representatives that will act as observers to the science team. The intended vessel will be the International Peace (IP). It is not anticipated that the IP will be performing sampling/monitoring for each application of dispersant nor for the full track of the spray applied, but a representative

Rear Admiral James A. Watson  
June 9, 2010  
Page 4

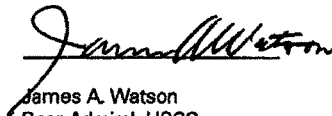
sampling will be accomplished. The IP commenced operations this date and is currently engaged in near shore activities.

Accordingly, in accordance with the Directive, Houma Unified Command respectfully requests an exemption to apply EC9500A in volumes on oil slicks located today shown in Table 1 not to exceed ~~32,000~~ <sup>21,000</sup> gallons for a period not to exceed 12 hours.

Sincerely,

Houma Unified Command

Exemption approved subject to the above:



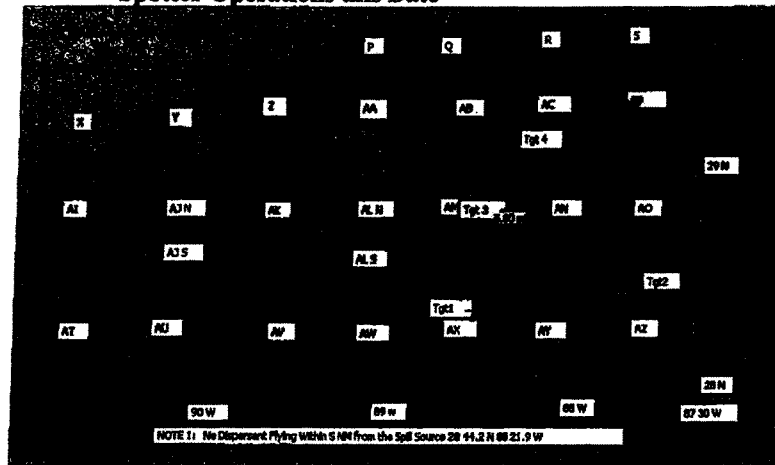
James A. Watson  
Rear Admiral, USCG  
Federal On-Scene Coordinator

Date: 6-10-10

Rear Admiral James A. Watson  
 June 9, 2010  
 Page 5

Attachment 1

**Dispersant Zone Map for 9 June 2010 with Oil Targets from  
 Spotter Operations this Date**



**TABLE 1**

| DISPERSIBLE OIL REPORT<br>(June 9, 2010) |                       |                                     |                           |                                    |                         |            |
|--|-----------------------|-------------------------------------|---------------------------|------------------------------------|-------------------------|------------|
|  | Targeted<br>Oil Slick | Estimated<br>Dimensions<br>in Miles | Estimated<br>Area (sq.mi) | Dispersant<br>Needed<br>(1/20 DOR) | Dispersant<br>Requested | Difference |
| Priority 1                               | 1                     | 21X3                                | 16                        | 133,000                            | 6,000                   | 127,000    |
| Priority 2                               | 2                     | 7X2                                 | 14                        | 2,000                              | 2,000                   | 0          |
| Priority 3                               | 3                     | 17X4                                | 24                        | 28,000                             | 24,000                  | 4,000      |
| Priority 4                               | 4                     | 21X6                                | 126                       | 200,000                            | 0                       | 200,000    |
| Total                                    |                       | NA                                  | 180                       | 363,000                            | 32,000                  | 332,000    |

Note: The above Table 1 shows our intentions based upon our observations the day before these actions take place. Size and location of slicks will change. Activities within slicks, e.g., skimming operations, in-situ burning, etc., or weather conditions may require revisions to the actual operational plan implemented.

Rear Admiral James A. Watson  
June 9, 2010  
Page 6

Attachment 2

## Nearshore Surface Oil Forecast Deepwater Horizon MC252

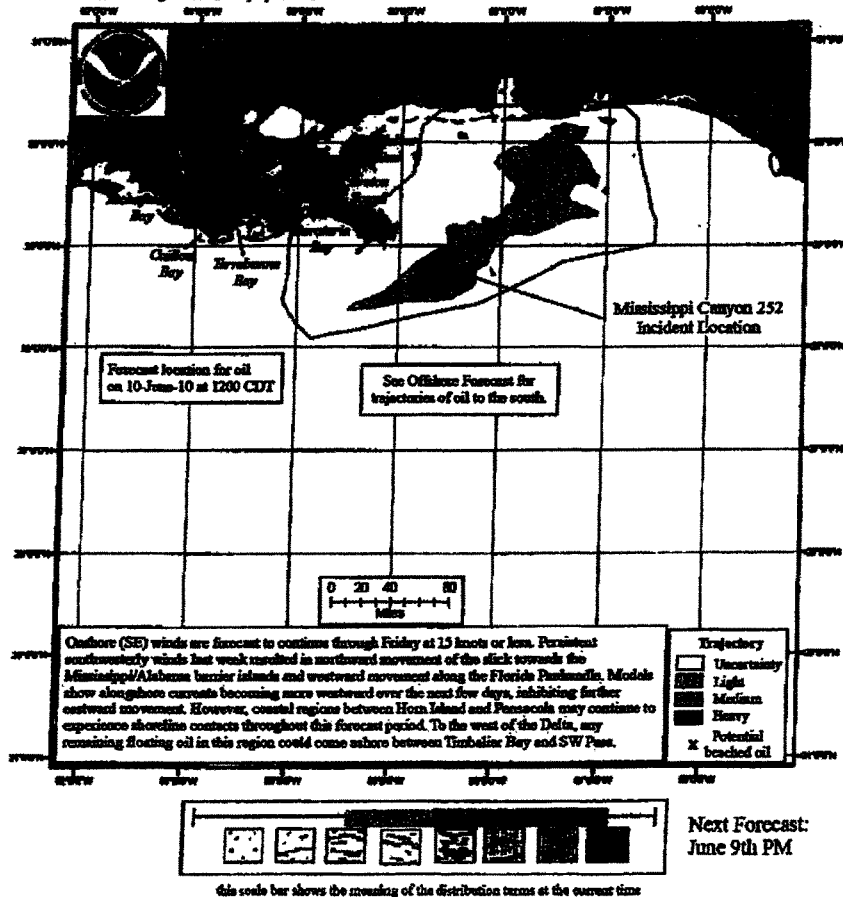
NOAA/NOS/OR&R

Nearshore

Estimate for: 1200 CDT, Thursday, 6/10/10

Date Prepared: 2100 CDT, Tuesday, 6/08/10

This forecast is based on the NWS spot forecast from Tuesday, June 8 PM. Currents were obtained from several models (NOAA Gulf of Mexico, West Florida ShelfUSE, NAVONRL) and HFR measurements. The model was initialized from Monday-Tuesday satellite imagery analysis (NOAA/NESDIS) and overflight observations. The leading edge may contain tuballs that are not readily observable from the imagery (hence not included in the model initialization). Oil near bay inlets could be brought into that bay by local tidal currents.



James A. Watson  
Rear Admiral, USCG  
Federal On-Scene Coordinator

June 10, 2010

Dear Admiral Watson:

In compliance with the May 26, 2010, Dispersant Monitoring and Assessment Directive - Addendum 3 (the "Directive"), Houma Unified Command has eliminated the surface application of dispersants, except in cases where an exemption is requested and justified, and approved by the Federal On-Scene Coordinator.

Houma Unified Command has twelve (12) spotter visual reports from 10 June of multiple slicks of dispersible oil (Attachment 1) and the NOAA Surface Oil Forecast for 11 June shows extensive areas of heavy and medium oil (Attachment 2). Weather forecast indicates excellent flying weather with winds of 8-10 knots, wave height 1.5'-2.5', ceilings unlimited and visibility 10 nm.

Houma Unified Command anticipates that, due to the weather, location, distribution (7,200 sqmi) and size of the multiple oil slicks identified (42 sqmi), the use of mechanical recovery and ISB to recover or remove the oil in the target area will be insufficient to remove the spill volume on June 11, 2010. Prior to spray operations the spotter aircraft will identify the highest value targeted slicks and will direct spray aircraft to the heaviest portions of the slick.

Pursuant to a request this date from Unified Area Command, the following information is provided.

- Include physical dimensions of identified targets proposed: this information is included in Table 1 and given in approximate acreage and average length and width perimeter dimensions.
- Explicit justification for why these targets can't be skimmed or addressed by other mechanical means: The use of mechanical recovery to recover or remove the oil in the identified target areas will be insufficient to remove the estimated dispersible oil volumes that we have estimated for tomorrow. The targeted oil herein is dispersible oil and dispersible oil is not the only oil demanding mechanical recovery assets. The geographic area of the spill site contains a combination of dispersible oil, heavy sheens and emulsified oil. Mechanical recovery devices are required elsewhere in the entire geographic area to address all areas and all oils that can be recovered mechanically and not just the dispersible oils and are therefore otherwise engaged.

ENCLOSURE 3

Rear Admiral James A. Watson  
 June 10, 2010  
 Page 2

- Tabulation of number of assets (skimmers, etc.) in service today and how many assets are available yet not in service: A daily summation of skimmers in the source area and outside the source is now being provided daily to the Aerial Dispersant Group for insertion in this report. Our review of the assets listed below reveal that they are engaged in skimming operations with some out of service for various reasons.

#### Offshore Skimming Resources

| Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | Date/Time |  | 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Rear Admiral James A. Watson  
**June 10, 2010**  
 Page 3

| Table 1  |                  |              |                  |         |
|----------|------------------|--------------|------------------|---------|
| Location | Volume (gallons) | Depth (feet) | Temperature (°F) | Remarks |
| 10       | 1000             | 10           | 60               | Sample  |
| 11       | 1000             | 10           | 60               | Sample  |
| 12       | 1000             | 10           | 60               | Sample  |
| 13       | 1000             | 10           | 60               | Sample  |
| 14       | 1000             | 10           | 60               | Sample  |
| 15       | 1000             | 10           | 60               | Sample  |
| 16       | 1000             | 10           | 60               | Sample  |
| 17       | 1000             | 10           | 60               | Sample  |
| 18       | 1000             | 10           | 60               | Sample  |
| 19       | 1000             | 10           | 60               | Sample  |
| 20       | 1000             | 10           | 60               | Sample  |

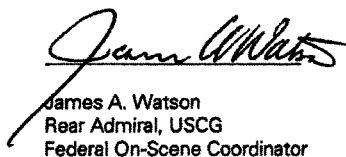
- It is planned to conduct multiple Tier 1 helicopter overflights to observe dispersant operations. Additionally the M/V International Peace will conduct water chemistry and toxicology sampling. All depending upon approval to apply dispersants.

Accordingly, in accordance with the Directive, Houma Unified Command respectfully requests an exemption to apply EC9500A in volumes on oil slicks located today shown in Table 1 not to exceed 15,300 gallons for a period not to exceed 12 hours.

Sincerely,

Houma Unified Command

Exemption approved subject to the above:

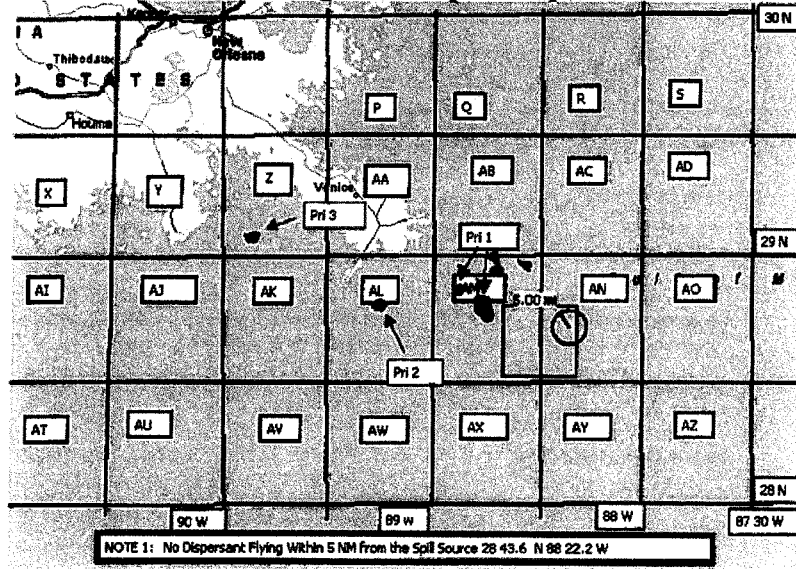
  
 James A. Watson  
 Rear Admiral, USCG  
 Federal On-Scene Coordinator

Date: Jun 10, 2010

Rear Admiral James A. Watson  
 June 10, 2010  
 Page 4

Attachment 1

**Dispersant Zone Map for 11 June 2010  
 with Oil Targets from Spotter Operations 10 June**



**TABLE 1**

| Dispersable Oil Report<br>June 10, 2010 |                                     |                           |                                    |                         |            |
|---|-------------------------------------|---------------------------|------------------------------------|-------------------------|------------|
|   | Estimated<br>Dimensions<br>in Miles | Estimated<br>Area (sq.mi) | Dispersant<br>Needed<br>(1/20 DOR) | Dispersant<br>Requested | Difference |
| Priority 1                              | 4x6                                 | 24                        | 38,400                             | 21,000                  | 17,400     |
| Priority 2                              | 4x4                                 | 16                        | 25,600                             | 12,000                  | 13,600     |
| Priority 3                              | 2x1                                 | 2                         | 3,200                              | 3,200                   | 0          |
| Total                                   |                                     | 42                        | 67,200                             | 36,200                  | 31,000     |

Note: Table 1 shows our intentions based upon our observations the day before these actions take place. Size and location of slicks will change. Activities within slicks, e.g., skimming operations, in-situ burning, etc., or weather conditions may require revisions to the actual operational plan implemented.



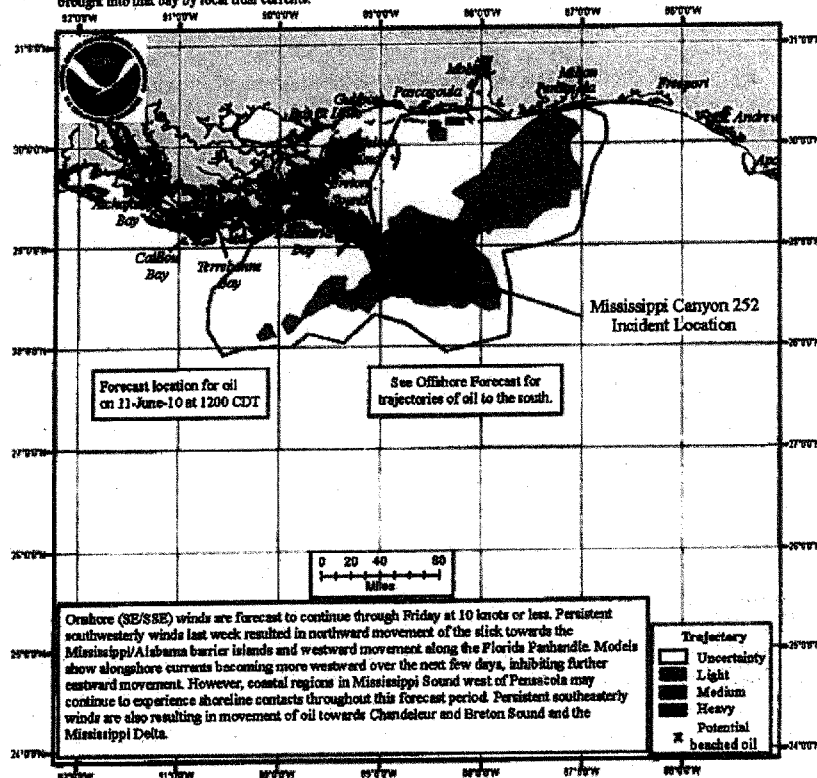
Rear Admiral James A. Watson  
**June 10, 2010**  
 Page 5

Attachment 2

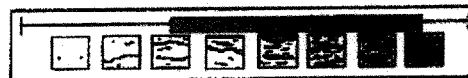
# **Nearshore** **Surface Oil Forecast** **Deepwater Horizon MC252**

NOAA/NOS/OR&R **Nearshore**  
 Estimate for: 1200 CDT, Friday, 6/11/10  
 Date Prepared: 2100 CDT, Wednesday, 6/09/10

This forecast is based on the NWS spot forecast from Wednesday, June 9 PM. Currents were obtained from several models (NOAA Gulf of Mexico, West Florida Shelf/USF, NAVO/NRL) and HFR measurements. The model was initialized from Wednesday satellite imagery analysis (NOAA/NESDIS) and overflight observations. The leading edge may contain turbidities that are not readily observable from the imagery (hence not included in the model initialization). Oil near bay inlets could be brought into that bay by local tidal currents.



Onshore (SE/SSE) winds are forecast to continue through Friday at 10 knots or less. Persistent southwesterly winds last week resulted in northward movement of the slick towards the Mississippi/Alabama barrier islands and westward movement along the Florida Panhandle. Models show alongshore currents becoming more westward over the next few days, inhibiting further eastward movement. However, coastal regions in Mississippi Sound west of Pensacola may continue to experience shoreline contacts throughout this forecast period. Persistent southeasterly winds are also resulting in movement of oil towards Chandeleur and Breton Sound and the Mississippi Delta.



Next Forecast:  
 June 10th PM

James A. Watson  
Rear Admiral, USCG  
Federal On-Scene Coordinator

June 11 2010

Dear Admiral Watson:

In compliance with the May 26, 2010, Dispersant Monitoring and Assessment Directive - Addendum 3 (the "Directive"), Houma Unified Command has eliminated the surface application of dispersants, except in cases where an exemption is requested and justified, and approved by the Federal On-Scene Coordinator.

Houma Unified Command has eleven (11) spotter visual reports from 11 June of multiple slicks of dispersible oil (Attachment 1) and the NOAA Surface Oil Forecast for 12 June shows extensive areas of heavy and medium oil (Attachment 2). Weather forecast indicates excellent flying weather with winds of 5-13 knots, wave height 2-3 feet, ceilings unlimited and visibility 10 nm.

Houma Unified Command anticipates that, due to the weather, location, distribution (2,700 sqmi) and size of the multiple oil slicks identified (34 sqmi), the use of mechanical recovery and ISB to recover or remove the oil in the target area will be insufficient to remove the spill volume on June 12, 2010. Prior to spray operations the spotter aircraft will identify the highest value targeted slicks and will direct spray aircraft to the heaviest portions of the slick.

Pursuant to a request this date from Unified Command, the following information is provided.

- Include physical dimensions of identified targets proposed: this information is included in Table 1 and given in approximate acreage and average length and width perimeter dimensions.
- Explicit justification for why these targets can't be skimmed or addressed by other mechanical means: The use of mechanical recovery to recover or remove the oil in the identified target areas will be insufficient to remove the estimated dispersible oil volumes that we have estimated for tomorrow. The targeted oil herein is dispersible oil and dispersible oil is not the only oil demanding mechanical recovery assets. The geographic area of the spill site contains a combination of dispersible oil, heavy sheens and emulsified oil. Mechanical recovery devices are required elsewhere in the entire geographic area to address all areas and all oils that can be recovered mechanically and not just the dispersible oils and are therefore otherwise engaged.

ENCLOSURE 4

Rear Admiral James A. Watson  
**June 11, 2010**  
 Page 2

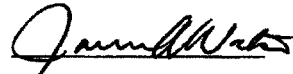
- Tabulation of number of assets (skimmers, etc.) in service today and how many assets are available yet not in service: A daily summation of skimmers in the source area and outside the source is now being provided daily to the Aerial Dispersant Group for insertion in this report (Attachment 3). Our review of the assets listed below reveal that they are engaged in skimming operations with some out of service for various reasons.
- It is planned to conduct multiple Tier 1 helicopter overflights to observe dispersant operations. Additionally the M/V International Peace will conduct water chemistry and toxicology sampling. All depending upon approval to apply dispersants.

Accordingly, in accordance with the Directive, the Houma Unified Command respectfully requests an exemption to apply EC9500A in volumes on oil slicks located today shown in Table 1 not to exceed ~~38,400~~ <sup>7,000</sup> gallons for a period not to exceed 12 hours.

Sincerely,

Houma Unified Command

Exemption approved subject to the above:



James A. Watson  
 Rear Admiral, USCG  
 Federal On-Scene Coordinator

Date: 6-12-10

James A. Watson  
Rear Admiral, USCG  
Federal On-Scene Coordinator

June 12, 2010

Dear Admiral Watson:

In compliance with the May 26, 2010, Dispersant Monitoring and Assessment Directive - Addendum 3 (the "Directive"), Houma Unified Command has eliminated the surface application of dispersants, except in cases where an exemption is requested and justified, and approved by the Federal On-Scene Coordinator.

Houma Unified Command has ten (10) spotter visual reports from 12 June of multiple slicks of dispersible oil (Attachment 1) and the NOAA Surface Oil Forecast for 13 June shows extensive areas of heavy and medium oil (Attachment 2). Weather forecast indicates excellent flying weather with winds of 5-9 knots, wave height 2 feet, ceilings unlimited and visibility 10 nm.

Houma Unified Command anticipates that, due to the weather, location, distribution (3,600 sqmi) and size of the multiple oil slicks identified the use of mechanical recovery and ISB to recover or remove the oil in the target area will be insufficient to remove the spill volume on June 13, 2010. Prior to spray operations the spotter aircraft will identify the highest value targeted slicks and will direct spray aircraft to the heaviest portions of the slick.

Pursuant to a request this date from Unified Command, the following information is provided.

- Estimated size of identified dispersible oil slick targets proposed in designated zones: this information is included in Table 1 with the estimate of the amount of dispersant needed to treat these slicks.
- Explicit justification for why these targets can't be skimmed or addressed by other mechanical means: The use of mechanical recovery to recover or remove the oil in the identified target areas will be insufficient to remove the estimated dispersible oil volumes that we have estimated for tomorrow. The targeted oil herein is dispersible oil and dispersible oil is not the only oil demanding mechanical recovery assets. The geographic area of the spill site contains a combination of dispersible oil, heavy sheens and emulsified oil. Mechanical recovery devices are required elsewhere throughout the entire geographic area to address all areas and all oils that can be recovered mechanically and not just the dispersible oils and are therefore otherwise engaged. Generally the skimming vessels are concentrated near the source site so that they can remain in the

ENCLOSURE 5

Rear Admiral James A. Watson  
June 12, 2010  
Page 2

heaviest oil and collect the highest volume of oil. Other skimming assets are deployed nearshore to recover oil before it comes ashore.

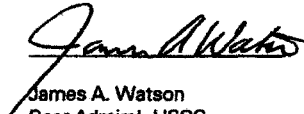
- Tabulation of number of assets (skimmers, etc.) in service today and how many assets are available yet not in service: A daily summation of skimmers in the source area and outside the source is now being provided daily to the Aerial Dispersant Group for insertion in this report (Attachment 3). Our review of the assets listed below reveal that they are engaged in skimming operations with some out of service for various reasons.
- It is planned to conduct multiple Tier 1 helicopter SMART overflights to observe dispersant operations. Additionally, the *MV International Peace* is planned to conduct water chemistry and toxicology sampling. These operations depend upon approval to apply dispersants either aerial or with boat spray systems onboard the *MV International Peace*.

Accordingly, in accordance with the Directive, the Houma Unified Command respectfully requests an exemption to apply EC9500A in volumes on oil slicks located today shown in Table 1 not to exceed 36,000 gallons for a period not to exceed 12 hours.

Sincerely,

Houma Unified Command

Exemption approved subject to the above:

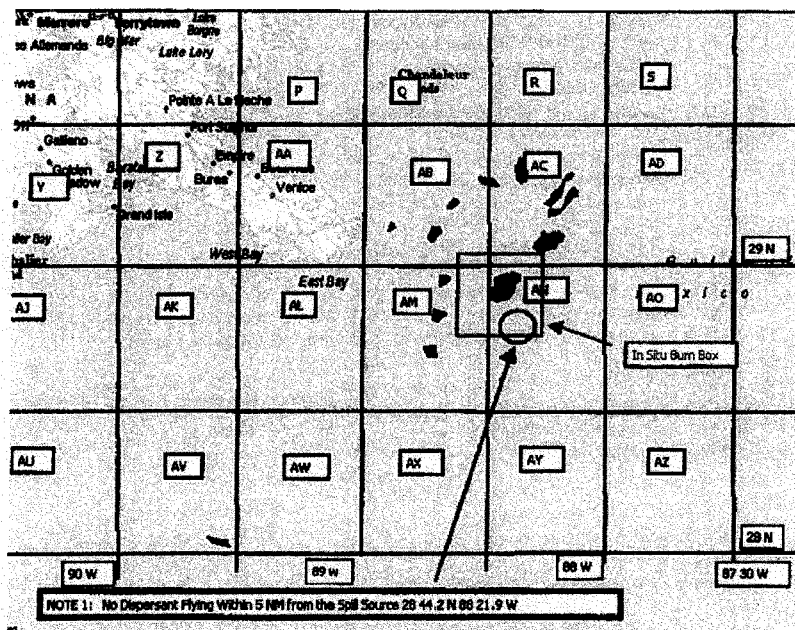
  
James A. Watson  
Rear Admiral, USCG  
Federal On-Scene Coordinator

Date: 6/13/10

Rear Admiral James A. Watson  
 June 12, 2010  
 Page 3

Attachment 1

**Dispersant Zone Map for 13 June 2010  
 with Oil Targets from Spotter Operations 12 June**



**TABLE 1 Dispersible Oil Report June 11, 2010**

|            | Zone | Estimated Area (sq.mi) | Estimated percentage dispersible oil | Dispersant Needed (1/28 DOR) |
|------------|------|------------------------|--------------------------------------|------------------------------|
| Priority 1 | AC   | 900                    | 1                                    | 28,800                       |
| Priority 2 | AM   | 900                    | 0.2                                  | 5,760                        |
| Priority 3 | AB   | 900                    | 0.05                                 | 1,440                        |
| Total      |      |                        |                                      | 36,000                       |

Note: Table 1 shows our intentions based upon our observations the day before these actions take place. Size and location of slicks will change. Activities within slick areas e.g., skimming operations, in-situ burning, etc., or weather conditions may require revisions to the actual operational plan implemented.

Rear Admiral James A. Watson  
**June 12, 2010**  
 Page 4

Attachment 2

**Nearshore**  
**Surface Oil Forecast**  
**Deepwater Horizon MC252**

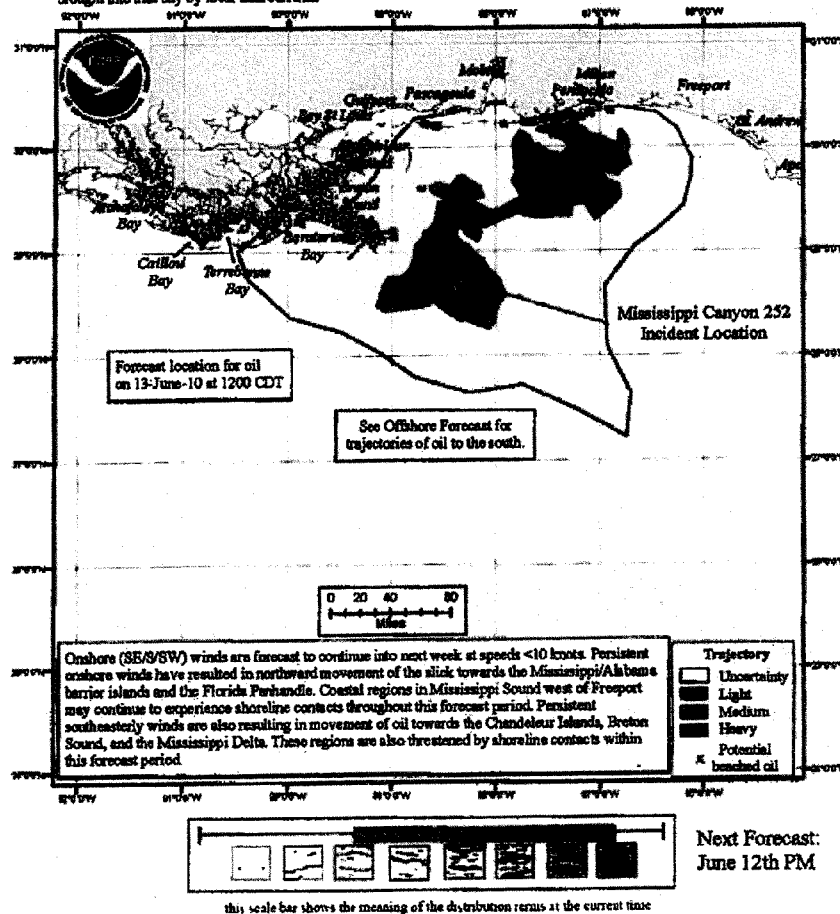
NOAA/NOS/OR&R

**Nearshore**

Estimate for: 1200 CDT, Sunday, 6/13/10

Date Prepared: 2100 CDT, Friday, 6/11/10

This forecast is based on the NWS spot forecast from Friday, June 11 PM. Currents were obtained from several models (NOAA Gulf of Mexico, West Florida Shelf/USF, NAVO/NRL) and HFR measurements. The model was initialized from Friday satellite imagery analysis (NOAA/NESDIS) and overflight observations. The leading edge may contain turbidity that are not readily observable from the imagery (hence not included in the model initialization). Oil near bay inlets could be brought into that bay by local tidal currents.



Rear Admiral James A. Watson  
 June 12, 2010  
 Page 5

Attachment 3

### Offshore Skimming Resources

Out of Service  
 In Transit  
 Out of Service  
 Lightning

| SOURCE     |           |                                      |                     |         |           |            |
|------------|-----------|--------------------------------------|---------------------|---------|-----------|------------|
| Designator | Kind/Type | Vessel                               | Assignment          | Status  | Date/Time | Location   |
| 1          | AR        | RV/AR                                | Coastal Response    | MSRC    | Skimming  | MC-252     |
| 2          | GCR       | RV/AR                                | Gulf Coast Response | MSRC    | Pt Ship   | Pt Jackson |
| 3          | AR        | RV/AR                                | Coastal Response    | MSRC    | Skimming  | MC-252     |
| 4          | AR        | RV/AR                                | Coastal Response    | MSRC    | Skimming  | MC-252     |
| 5          | AR        | RV/AR                                | Coastal Response    | MSRC    | Skimming  | MC-252     |
| 6          | AR        | RV/AR                                | Coastal Response    | MSRC    | Skimming  | MC-252     |
| 7          | AR        | RV/AR                                | Coastal Response    | MSRC    | Skimming  | MC-252     |
| 8          | AR        | RV/AR                                | Coastal Response    | MSRC    | Skimming  | MC-252     |
| 9          | AR        | RV/AR                                | Coastal Response    | MSRC    | Skimming  | MC-252     |
| 10         | AR        | RV/AR                                | Coastal Response    | MSRC    | Skimming  | MC-252     |
| 11         | AR        | RV/AR                                | Coastal Response    | MSRC    | Skimming  | MC-252     |
| 12         | AR        | RV/AR                                | Coastal Response    | MSRC    | Skimming  | MC-252     |
| 13         | AR        | RV/AR                                | Coastal Response    | MSRC    | Skimming  | MC-252     |
| 14         | AR        | RV/AR                                | Coastal Response    | MSRC    | Skimming  | MC-252     |
| 15         | AR        | RV/AR                                | Coastal Response    | MSRC    | Skimming  | MC-252     |
| 16         | AR        | RV/AR                                | Coastal Response    | MSRC    | Skimming  | MC-252     |
| 17         | AR        | RV/AR                                | Coastal Response    | MSRC    | Skimming  | MC-252     |
| 18         | AR        | RV/AR                                | Coastal Response    | MSRC    | Skimming  | MC-252     |
| 19         | AR        | RV/AR                                | Coastal Response    | MSRC    | Skimming  | MC-252     |
| 20         | AR        | RV/AR                                | Coastal Response    | MSRC    | Skimming  | MC-252     |
| 21         | AR        | RV/AR                                | Coastal Response    | MSRC    | Skimming  | MC-252     |
| 22         | AR        | RV/AR                                | Coastal Response    | MSRC    | Skimming  | MC-252     |
| 23         | AR        | RV/AR                                | Coastal Response    | MSRC    | Skimming  | MC-252     |
| 24         | AR        | RV/AR                                | Coastal Response    | MSRC    | Skimming  | MC-252     |
| 452        | TV1       | MSRC 452 Barge (Tara Crosby)         | TF Storage          | Standby |           | Pt Jackson |
| 570        | TV1       | MSRC 570 Barge (Crosby Clipper)      | TF Storage          | Standby |           | Pilot Town |
|            | TV1       | Energy 8001 (Superior Service) Coast | TF Storage          | Enroute |           | MC-252     |



Rear Admiral James A. Watson

**June 12, 2010**

Page 6

[illegible]

James A. Watson  
Rear Admiral, USCG  
Federal On-Scene Coordinator

June 13, 2010

Dear Admiral Watson:

In compliance with the May 26, 2010, Dispersant Monitoring and Assessment Directive - Addendum 3 (the "Directive"), Houma Unified Command has eliminated the surface application of dispersants, except in cases where an exemption is requested and justified, and approved by the Federal On-Scene Coordinator.

Houma Unified Command has ten (10) spotter visual reports from 13 June of multiple slicks of dispersible oil (Attachment 1) and the NOAA Surface Oil Forecast for 14 June shows extensive areas of heavy and medium oil (Attachment 2). Weather forecast indicates excellent flying weather with winds of 5-10 knots, wave height 1-2 feet, ceilings unlimited and visibility 10 nm.

Houma Unified Command anticipates that, due to the weather, location, distribution (3,600 sqmi) and size of the multiple oil slicks identified the use of mechanical recovery and ISB to recover or remove the oil in the target area will be insufficient to remove the spill volume on June 14, 2010. Prior to spray operations the spotter aircraft will identify the highest value targeted slicks and will direct spray aircraft to the heaviest portions of the slick.

Pursuant to a request this date from Unified Command, the following information is provided.

- Estimated size of identified dispersible oil slick targets proposed in designated zones: this information is included in Table 1 with the estimate of the amount of dispersant needed to treat these slicks.
- Explicit justification for why these targets can't be skimmed or addressed by other mechanical means: The use of mechanical recovery to recover or remove the oil in the identified target areas will be insufficient to remove the estimated dispersible oil volumes that we have estimated for tomorrow. The targeted oil herein is dispersible oil and dispersible oil is not the only oil demanding mechanical recovery assets. The geographic area of the spill site contains a combination of dispersible oil, heavy sheens and emulsified oil. Mechanical recovery devices are required elsewhere throughout the entire geographic area to address all areas and all oils that can be recovered mechanically and not just the dispersible oils and are therefore otherwise engaged. Generally the skimming vessels are concentrated near the source site so that they can remain in the

ENCLOSURE 6

Rear Admiral James A. Watson  
June 13, 2010  
Page 2

heaviest oil and collect the highest volume of oil. Other skimming assets are deployed nearshore to recover oil before it comes ashore.

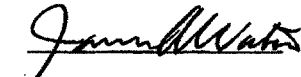
- Tabulation of number of assets (skimmers, etc.) in service today and how many assets are available yet not in service: A daily summation of skimmers in the source area and outside the source is now being provided daily to the Aerial Dispersant Group for insertion in this report (Attachment 3). Our review of the assets listed below reveal that they are engaged in skimming operations with some out of service for various reasons.
- It is planned to conduct multiple Tier 1 helicopter SMART overflights to observe dispersant operations. Additionally, the *M/V International Peace* is planned to conduct water chemistry and toxicology sampling. These operations depend upon approval to apply dispersants either aerial or with boat spray systems onboard the *M/V International Peace*.

Accordingly, in accordance with the Directive, the Houma Unified Command respectfully requests an exemption to apply EC9500A in volumes on oil slicks located today shown in Table 1 not to exceed ~~33,800~~ 17,800 gallons for a period not to exceed 12 hours.

Sincerely,

Houma Unified Command

Exemption approved subject to the above:

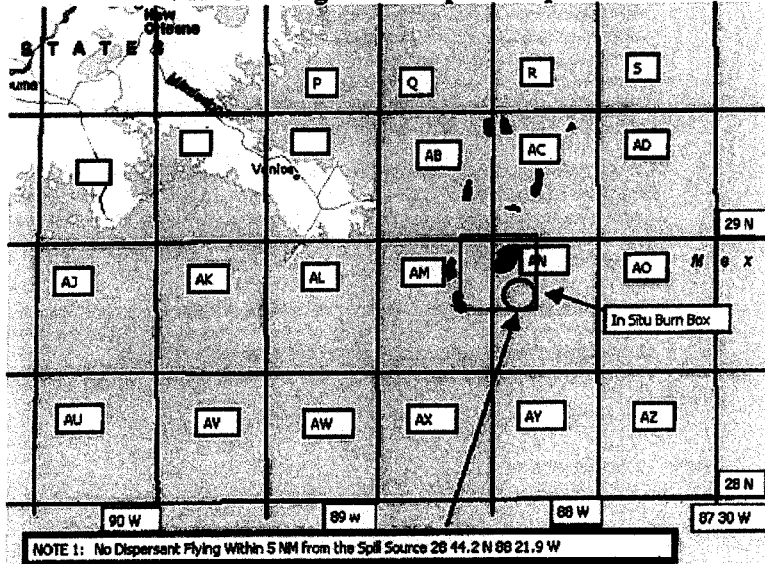
  
James A. Watson  
Rear Admiral, USCG  
Federal On-Scene Coordinator

Date: 6-14-10

Rear Admiral James A. Watson  
 June 13, 2010  
 Page 3

Attachment 1

**Dispersant Zone Map for 14 June 2010  
 with Oil Targets from Spotter Operations 13 June**



**TABLE 1**  
**Dispersible Oil Report June 13, 2010**

|            | Zone | Estimated Area (sq.mi) | Estimated percentage dispersible oil | Dispersant Needed (1/20 DOR) |
|------------|------|------------------------|--------------------------------------|------------------------------|
| Priority 1 | AC   | 900                    | 1                                    | 28,800                       |
| Priority 2 | AM   | 900                    | 0.3                                  | 8,640                        |
| Priority 3 | AB   | 900                    | 0.05                                 | 1,440                        |
| Total      |      | 2,700                  |                                      | 38,880                       |

Note: Table 1 shows our intentions based upon our observations the day before these actions take place. Size and location of slicks will change. Activities within slick areas e.g., skimming operations, in-situ burning, etc., or weather conditions may require revisions to the actual operational plan implemented.

Rear Admiral James A. Watson  
**June 13, 2010**  
 Page 4

Attachment 2

# **Nearshore** **Surface Oil Forecast** **Deepwater Horizon MC252**

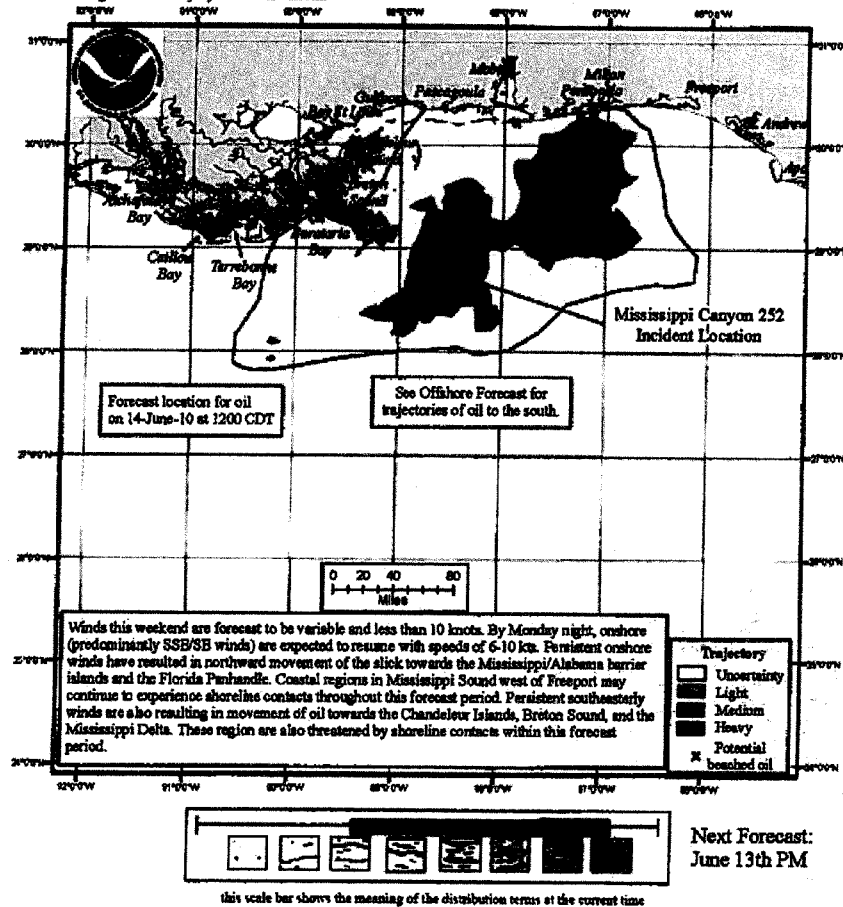
NOAA/NOS/OR&R

**Nearshore**

Estimate for: 1200 CDT, Monday, 6/14/10

Date Prepared: 2100 CDT, Saturday, 6/12/10

This forecast is based on the NWS spot forecast from Saturday, June 12 PM. Currents were obtained from several models (NOAA Gulf of Mexico, West Florida Shelf/USE, NAVO/NRL) and HFR measurements. The model was initialized from Saturday satellite imagery analysis (NOAA/NESDIS) and overflight observations. The leading edge may contain turbidities that are not readily observable from the imagery (hence not included in the model initialization). Oil near bay inlets could be brought into that bay by local tidal currents.



Rear Admiral James A. Watson  
 June 13, 2010  
 Page 5

Attachment 3

### Offshore Skimming Resources

**IN TRANSIT**

| SOURCE    |          |                                       |            |         | Date/Time  | 13 June 2010 |
|-----------|----------|---------------------------------------|------------|---------|------------|--------------|
| Dredge/ID | Mod/Type | Vessel                                | Assignment | Status  | Location   | IR/A         |
| 1         |          |                                       |            |         |            |              |
| 2         |          |                                       |            |         |            |              |
| 3         |          |                                       |            |         |            |              |
| 4         |          |                                       |            |         |            |              |
| 5         |          |                                       |            |         |            |              |
| 6         |          |                                       |            |         |            |              |
| 7         |          |                                       |            |         |            |              |
| 8         |          |                                       |            |         |            |              |
| 9         |          |                                       |            |         |            |              |
| 10        |          |                                       |            |         |            |              |
| 11        |          |                                       |            |         |            |              |
| 12        |          |                                       |            |         |            |              |
| 13        |          |                                       |            |         |            |              |
| 14        |          |                                       |            |         |            |              |
| 15        |          |                                       |            |         |            |              |
| 16        |          |                                       |            |         |            |              |
| 17        |          |                                       |            |         |            |              |
| 18        |          |                                       |            |         |            |              |
| 19        |          |                                       |            |         |            |              |
| 20        |          |                                       |            |         |            |              |
| 21        |          |                                       |            |         |            |              |
| 22        |          |                                       |            |         |            |              |
| 23        |          |                                       |            |         |            |              |
| 24        |          |                                       |            |         |            |              |
| 452       | TVI      | NSRC 452 Barge (Tara Crosby)          | TF Barge   | Standby | Pt Jackson |              |
| 570       | TVI      | NSRC 570 Barge (Crosby Clipper)       | TF Storage | Standby | Pilot Town |              |
| Cobnar    | TVI      | Energy 8001 (Superior Service) Cobnar | TF Storage | Inroute | NC-352     |              |

**NON SOURCE**

| Dredge/ID | Mod/Type | Vessel               | Assignment | Status  | Location | IR/A |
|-----------|----------|----------------------|------------|---------|----------|------|
| 61-553    | TVI      | 61-553 (Tara Crosby) | TF Storage | Inroute | NC-352   |      |

James A. Watson  
Rear Admiral, USCG  
Federal On-Scene Coordinator

June 14, 2010

Dear Admiral Watson:

In compliance with the May 26, 2010, Dispersant Monitoring and Assessment Directive - Addendum 3 (the "Directive"), Houma Unified Command has eliminated the surface application of dispersants, except in cases where an exemption is requested and justified, and approved by the Federal On-Scene Coordinator.

Houma Unified Command has nine (9) spotter visual reports from 13 June of multiple slicks of dispersible oil (Attachment 1) and the NOAA Surface Oil Forecast for 14 June shows extensive areas of heavy and medium oil (Attachment 2). Weather forecast indicates excellent flying weather with winds of 6-8 knots, wave height 1 foot, ceilings unlimited and visibility 10 nm.

Houma Unified Command anticipates that, due to the weather, location, distribution (4,500 sqmi) and size of the multiple oil slicks identified the use of mechanical recovery and ISB to recover or remove the oil in the target area will be insufficient to remove the spill volume on June 15, 2010. Prior to spray operations the spotter aircraft will identify the highest value targeted slicks and will direct spray aircraft to the heaviest portions of the slick.

Pursuant to a request this date from Unified Command, the following information is provided.

- Estimated size of identified dispersible oil slick targets proposed in designated zones: this information is included in Table 1 with the estimate of the amount of dispersant needed to treat these slicks.
- Explicit justification for why these targets can't be skimmed or addressed by other mechanical means: The use of mechanical recovery to recover or remove the oil in the identified target areas will be insufficient to remove the estimated dispersible oil volumes that we have estimated for tomorrow. The targeted oil herein is dispersible oil and dispersible oil is not the only oil demanding mechanical recovery assets. The geographic area of the spill site contains a combination of dispersible oil, heavy sheens and emulsified oil. Mechanical recovery devices are required elsewhere throughout the entire geographic area to address all areas and all oils that can be recovered mechanically and not just the dispersible oils and are therefore otherwise engaged. Generally the skimming vessels are concentrated near the source site so that they can remain in the

ENCLOSURE 7

Rear Admiral James A. Watson  
June 13, 2010  
Page 2

heaviest oil and collect the highest volume of oil. Other skimming assets are deployed nearshore to recover oil before it comes ashore.

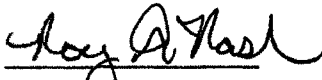
- Tabulation of number of assets (skimmers, etc.) in service today and how many assets are available yet not in service: A daily summation of skimmers in the source area and outside the source is now being provided daily to the Aerial Dispersant Group for insertion in this report (Attachment 3). Our review of the assets listed below reveal that they are engaged in skimming operations with some out of service for various reasons.
- It is planned to conduct multiple Tier 1 helicopter SMART overflights to observe dispersant operations. Additionally, the *M/V International Peace* is planned to conduct water chemistry and toxicology sampling. These operations depend upon approval to apply dispersants either aerial or with boat spray systems onboard the *M/V International Peace*.

Accordingly, in accordance with the Directive, the Houma Unified Command respectfully requests an exemption to apply EC9500A in volumes on oil slicks located today shown in Table 1 not to exceed 23,000 gallons for a period not to exceed 12 hours.

Sincerely,

Houma Unified Command

Exemption approved subject to the above:



Date:

6/15/2010

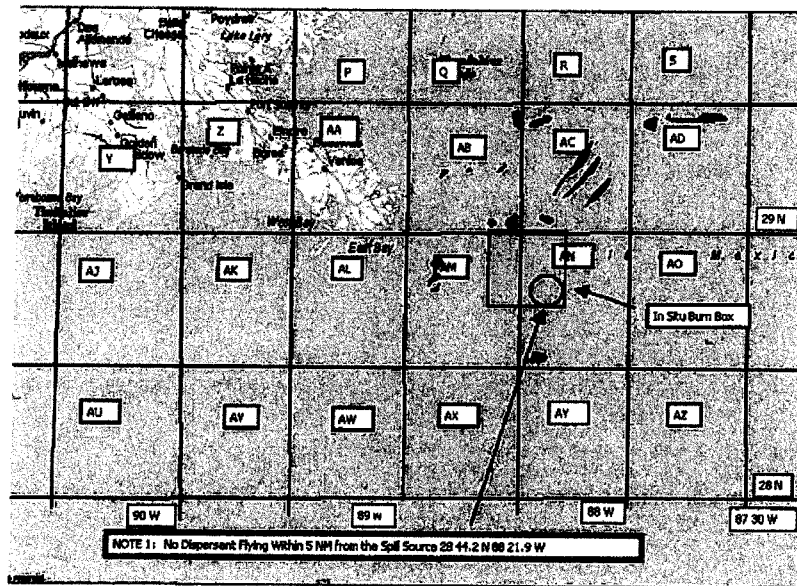
For: James A. Watson  
Rear Admiral, USCG  
Federal On-Scene Coordinator



Rear Admiral James A. Watson  
 June 13, 2010  
 Page 3

Attachment 1

**Dispersant Zone Map for 15 June 2010  
 with Oil Targets from Spotter Operations on 14 June**



**TABLE 1  
 Dispersible Oil Report June 14, 2010**

|            | Zone | Estimated Area<br>(sq.mi) | Estimated percentage<br>dispersible oil | Dispersant Needed<br>(1/20 DOR) |
|------------|------|---------------------------|---|---------------------------------|
| Priority 1 | AD   | 900                       | .2                                      | 5,600                           |
| Priority 2 | AC   | 900                       | 1.0                                     | 13,440                          |
| Priority 3 | AB   | 900                       | .01                                     | 1,120                           |
| Priority 4 | AM   | 900                       | .02                                     | 1,440                           |
| Priority 5 | AN   | 900                       | .01                                     | 1,120                           |
| Total      |      | 4,500                     |   | 22,720                          |

Note: Table 1 shows our intentions based upon our observations the day before these actions take place. Size and location of slicks will change. Activities within slick areas e.g., skimming operations, in-situ burning, etc., or weather conditions may require revisions to the actual operational plan implemented.

Rear Admiral James A. Watson  
 June 13, 2010  
 Page 4

Attachment 2

**Nearshore**  
**Surface Oil Forecast**  
**Deepwater Horizon MC252**

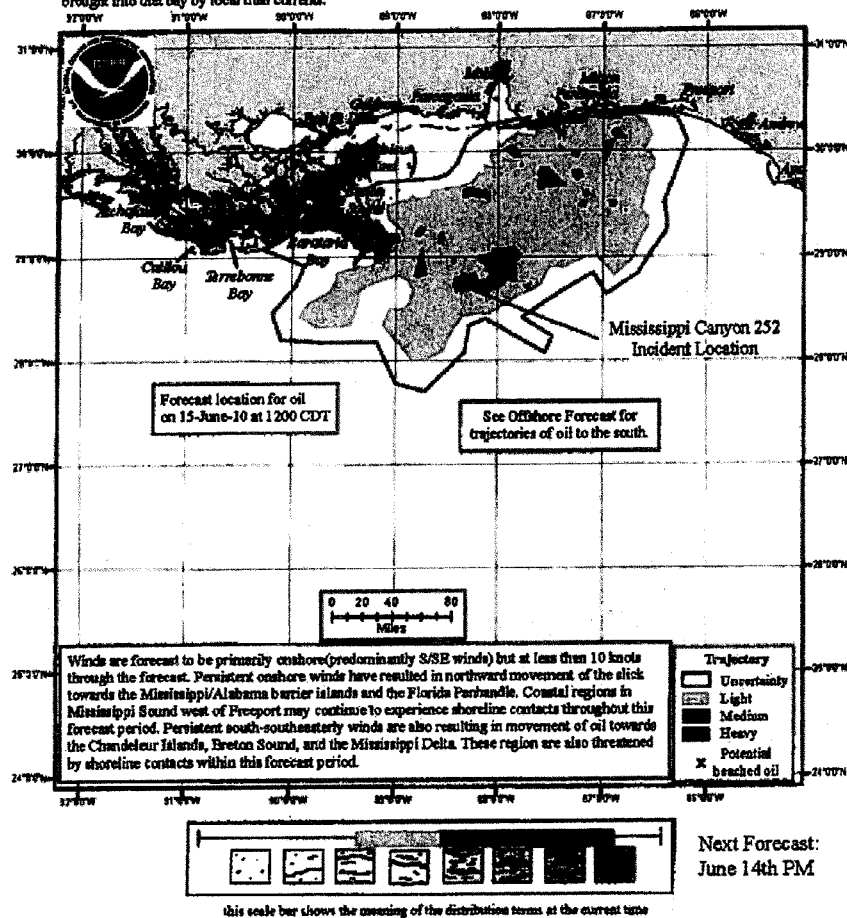
NOAA/NOS/OR&R

**Nearshore**

Estimate for: 1200 CDT, Tuesday, 6/15/10

Date Prepared: 2100 CDT, Sunday, 6/13/10

This forecast is based on the NWS spot forecast from Sunday, June 13 PM. Currents were obtained from several models (NOAA Gulf of Mexico, West Florida Shelf/USF, NAVO/NRL) and HFR measurements. The model was initialized from Sunday satellite imagery analysis (NOAA/NESDIS) and overflight observations. The leading edge may contain turbidities that are not readily observable from the imagery (hence not included in the model initialization). Oil near bay inlets could be brought into that bay by local tidal currents.



## Offshore Skimming Resources

| SOURCE  |             |        | Date/Time                  |
|---|-------------|--------|----------------------------|
| Designator                                    | Kind / Type | Vessel | Assignment Status Location |
| <div style="text-align: center;">Page 1</div> |             |        |                            |

|            |     |                                 |            |         |            |     |
|------------|-----|---------------------------------|------------|---------|------------|-----|
| 452        | TV1 | MSRC 452 Barge (Tara Crosby)    | TF Storage | Standby | Ft Jackson |     |
| 570        | TV1 | MSRC 570 Barge (Crosby Clipper) | TF Storage | Standby | Pilot Town |     |
|            |     |                                 |            |         |            |     |
|            |     | <b>Boom Boats</b>               |            |         |            |     |
| Designator |     | Vessel                          | Assignment |         | Location   | ETA |
| CC         |     | Chanese G                       | Central    | Standby | Venice     |     |
| SF         |     | Sea Fox                         | Central    | Standby | Venice     |     |
|            |     |                                 |            |         |            |     |
| JN         |     | Julienne Marie                  | Central    | Standby | Venice     |     |
| SH         |     | Sea Hawk                        | Central    | Standby | Venice     |     |

Rear Admiral James A. Watson  
 June 13, 2010  
 Page 6

| Crew/Re-supply |                 |                            |              |  |
|----------------|-----------------|----------------------------|--------------|--|
| ML             | Mr. Leroy       | Shuttle/Re-Supply Run      | Venice Based |  |
| FO             | Fox             | Shuttle/Re-Supply Run      | Venice Based |  |
| JP             | Jean Perry      | Shuttle/Re-Supply Run      | Venice Based |  |
| CS             | Corissa Shane   | Shuttle/Re-Supply Run      | Venice Based |  |
| KL             | Katie Lynn      | Shuttle/Re-Supply Run      | Venice Based |  |
| BC             | Ben Charamie    | Shuttle/Re-Supply Run      | Venice Based |  |
| Inland Barges  |                 |                            |              |  |
| 323            | Cenac 323 Barge | TF Storage 21,000 bbl open | Venice       |  |
| 324            | Cenac 324 Barge | TF Storage 21,000 bbl open | Venice       |  |

| NON/SOURCE |        |                |        |          |
|------------|--------|----------------|--------|----------|
| Designator | Vessel | Assignment     | Status | Location |
| GI         | RV1    | Gulf Influence | FED    | Enroute  |

June 9, 2010

Jim Watson  
Rear Admiral, USCG  
Federal On-Scene Coordinator

RE: Weekly Source Control Surface Dispersant Plan (June 10 through 16, 2010)

Dear Admiral Watson,

In compliance with the May 26, 2010, Dispersant Monitoring and Assessment Directive - Addendum 3 (the "Directive"), BP Exploration & Production Inc. ("BP") submitted a weekly Source Control Surface Dispersant Plan for the week June 3 to June 9, which you approved on June 3. The plan allowed for a maximum daily application volume (calendar day) of 6,000 gallons, unless more was required to control VOCs. During the week in question, the average daily volume acquired was 4,225 gallons. High VOC conditions required that the expected maximum volume was exceeded on the 4<sup>th</sup>, 6<sup>th</sup>, and 7<sup>th</sup> of June.

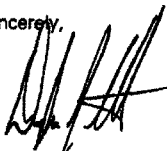
The current offshore air monitoring plan for source control (2200-T2-DO-PN-4002-4 signed May 25, 2010) identifies air monitoring instrumentation, location and action levels to respond to VOC excursions. In addition, vapor suppression guidelines (attachment 1) were put in place May 29, 2010 to provide additional granularity for action requirements. The air monitoring data is transparent to USCG and EPA.

BP respectfully requests approval of to the Weekly Source Control Dispersant Plan for June 10 through June 16, as follows

| <u>Date</u> | <u>Expected Maximum Volume per calendar day (gals)</u> |
|-------------|--|
| June 10     | 6000   |
| June 11     | 6000   |
| June 12     | 6000   |
| June 13     | 6000   |
| June 14     | 6000   |
| June 15     | 6000   |
| June 16     | 6000   |

Should VOC monitoring dictate further deployment in accordance with the Air Monitoring Plan for Source Control, BP also respectfully requests to exceed these volumes as required.

Sincerely,

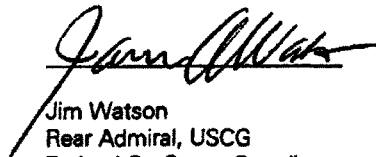


Douglas J. Suttles

ENCLOSURE 8

Rear Admiral Jim Watson  
May 29, 2010  
Page 2

Approval granted subject to the above:

  
Jim Watson  
Rear Admiral, USCG  
Federal On-Scene Coordinator

Date: June 9, 2010

Rear Admiral Jim Watson  
May 29, 2010  
Page 3

**Attachment 1**  
**Vapor Suppression Guidelines**  
**May 29, 2010**

These guidelines pertain to deployment and use of dispersant vessels and fire fighting vessels in Source Control Operations. The guidance provides additional detail around action levels specified in the Offshore Air Monitoring Plan for Source Control (2200-T2-DO-PN-4002-4). In addition, this guidance aligns with Dispersant Procedures for Vessels Adriatic and HOS Super H (2200-T2-LC-RP-4091) and Fire Fighting Vessels Operating (Priorities and Procedures (2200-T2-DO-PR-4057).

All vessels experiencing VOC levels exceeding 50PPM are directed to report it to Source Control SimOps Branch Director. Application of dispersant should be coordinated through the Source Control SimOps Branch Director.

Recommended actions for VOC management:

- VOC levels of 20 to 70ppm
  - Use Rem Forza and Kay Marine 5 vessels for wide spray water pattern to suppress and redirect vapors
- VOC over 70ppm
  - Notify Source Control SimOps Branch Director to coordinate dispersant use
  - Use HOS Super H and Adriatic as primary dispersant vessels
  - Use Rem Forza and Kay Marine 5 vessels to apply dispersant when wide spray water pattern is not effective

Jim Watson  
Rear Admiral, USCG  
Federal On-Scene Coordinator

June 4, 2010

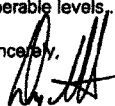
Dear Admiral Watson:

In compliance with the May 26, 2010, Dispersant Monitoring and Assessment Directive - Addendum 3 (the "Directive"), BP Exploration & Production Inc. ("BP") has eliminated the surface application of dispersants, except in cases where an exemption is requested and justified, and approved by the Federal On-Scene Coordinator. In addition, the subsurface application has been capped to 15,000 gallons per calendar day.


Placement of the LMRP cap resulted in interruptions to subsea dispersant (only 10,241 gallons) and non-optimal placement of deployment wand. As a result VOC emissions are posing operational risk to maintaining the Enterprise vessel on station.

Accordingly, in accordance with the Directive, BP respectfully requests an exemption to increase application of EC9500A in volumes from 15,000 per calendar day to 23,000 gallons for the calendar day June 4<sup>th</sup> should it be needed to maintain VOC emissions at operable levels.

Sincerely,

  
Douglas J. Suttles

Exemption approved subject to the above:

  
James A. Watson  
Rear Admiral, USCG  
Federal On-Scene Coordinator

Date: 4 Jun 10

ENCLOSURE 4



June 19, 2010

Jim Watson  
Rear Admiral, USCG  
Federal On-Scene Coordinator

RE: Guidance on Subsea Dispersant Application

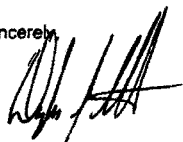
Dear Admiral Watson,

On June 8, you approved GoM Drilling, Completions, and Interventions – MC 252: Guidance on Subsea Dispersant Application Ops Note #3. You approved this plan through June 30, 2010. The plan defines a maximum application of dispersant subsea of 15,000 gallons per calendar day, consistent with the Dispersant Monitoring and Assessment Directive – Addendum 3 (the "Directive"). The Directive requires a formal application for an exemption should application rates greater than 15,000 gallons per calendar day be necessary.

Between 21:00 and 24:00 yesterday (June 18) very high VOCs were measured around the containment vessels Discoverer Enterprise (>300 ppm) and Q4000 (over 200 ppm). Subsea dispersant application was increased to 15 gallons per minute and has successfully reduced VOC level. If sustained application at 15 gallons per minute is required to maintain safe operating conditions, the 15,000 gallon per calendar day maximum will be breached.

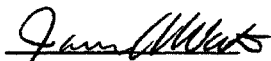
BP respectfully requests an exemption to the Directive's maximum daily application of subsea dispersant in the event that such application is required to maintain safe operating conditions. This exemption shall be for Saturday June 19, 2010.

Sincerely,



Douglas J. Suttles

Approval granted subject to the above:



Jim Watson  
Rear Admiral, USCG

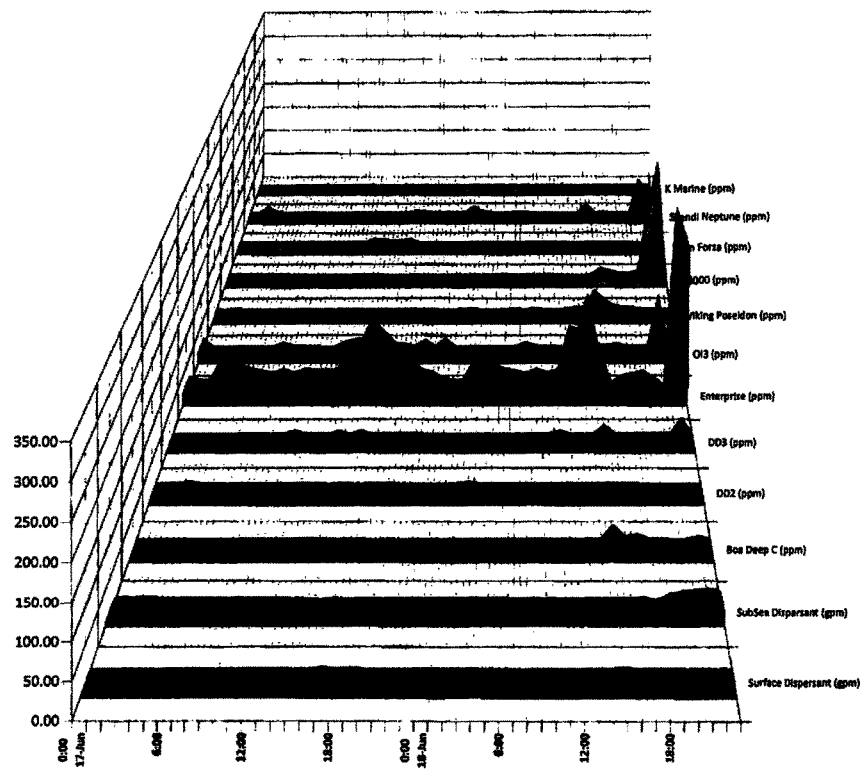
Date: 6-19-10

ENCLOSURE 10

Rear Admiral Jim Watson  
May 29, 2010  
Page 2

Federal On-Scene Coordinator

6/19/2010

**48 Hour Dispersant Application and VOC Chart**

James A. Watson  
Rear Admiral, USCG  
Federal On-Scene Coordinator

June 15, 2010

Dear Admiral Watson:

In compliance with the May 26, 2010, Dispersant Monitoring and Assessment Directive - Addendum 3 (the "Directive"), BP Exploration & Production Inc. ("BP") has eliminated the surface application of dispersants, except in cases where an exemption is requested and justified, and approved by the Federal On-Scene Coordinator.

Houma Unified Command has nine (9) spotter visual reports from 15 June of multiple slicks of dispersible oil (Attachment 1) and the NOAA Surface Oil Forecast for 16 June shows extensive areas of heavy and medium oil (Attachment 2). Weather forecast indicates excellent flying weather with winds of 5-10 knots, wave height 1-2 feet, ceilings unlimited and visibility 10 nm; 20 per cent chance of thunderstorms in the area.

Houma Unified Command anticipates that, due to the weather, location, distribution (3,600 sqmi) and size of the multiple oil slicks identified the use of mechanical recovery and ISB to recover or remove the oil in the target area will be insufficient to remove the spill volume on June 16, 2010. Prior to spray operations the spotter aircraft will identify the highest value targeted slicks and will direct spray aircraft to the heaviest portions of the slick.

Pursuant to a request this date from Unified Command, the following information is provided.

- Estimated size of identified dispersible oil slick targets proposed in designated zones: this information is included in Table 1 with the estimate of the amount of dispersant needed to treat these slicks.
- Explicit justification for why these targets can't be skimmed or addressed by other mechanical means: The use of mechanical recovery to recover or remove the oil in the identified target areas will be insufficient to remove the estimated dispersible oil volumes that we have estimated for tomorrow. The targeted oil herein is dispersible oil and dispersible oil is not the only oil demanding mechanical recovery assets. The geographic area of the spill site contains a combination of dispersible oil, heavy sheens and emulsified oil. Mechanical recovery devices are required elsewhere throughout the entire geographic area to address all areas and all oils that can be recovered mechanically and not just the dispersible oils and are therefore otherwise engaged. Generally the skimming vessels are concentrated near the source site so that they can remain in the

ENCLOSURE 11

Rear Admiral James A. Watson  
June 15, 2010  
Page 2

heaviest oil and collect the highest volume of oil. Other skimming assets are deployed nearshore to recover oil before it comes ashore.

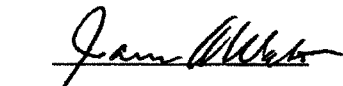
- Tabulation of number of assets (skimmers, etc.) in service today and how many assets are available yet not in service: A daily summation of skimmers in the source area and outside the source is now being provided daily to the Aerial Dispersant Group for insertion in this report (Attachment 3). Our review of the assets listed below reveal that they are engaged in skimming operations with some out of service for various reasons.
- It is planned to conduct multiple Tier 1 helicopter SMART overflights to observe dispersant operations. Additionally, the M/V *International Peace* is planned to conduct water chemistry and toxicology sampling. These operations depend upon approval to apply dispersants either aerial or with boat spray systems onboard the M/V *International Peace*.

Accordingly, in accordance with the Directive, the Houma Unified Command respectfully requests an exemption to apply EC9500A in volumes on oil slicks located today shown in Table 1 not to exceed 27,700 gallons for a period not to exceed 12 hours.

Sincerely,

Houma Unified Command

Exemption approved subject to the above:

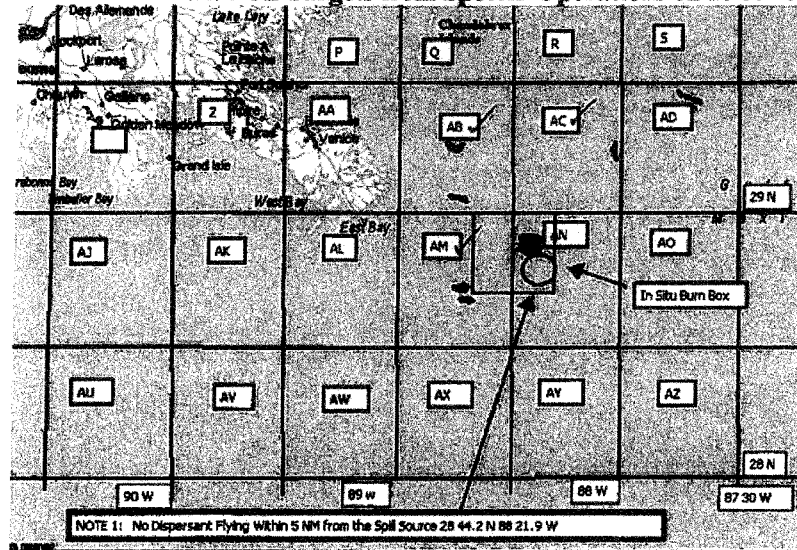
  
James A. Watson  
Rear Admiral, USCG  
Federal On-Scene Coordinator

Date: 6-16-10

Rear Admiral James A. Watson  
 June 15, 2010  
 Page 3

Attachment 1

**Dispersant Zone Map for 16 June 2010  
 with Oil Targets from Spotter Operations on 15 June**



**TABLE 1  
 Dispersible Oil Report June 15, 2010**

| Zone         | # of slicks reported | Area in acres | Estimated percentage dispersible oil   | Dispersant Needed (1/20 DOR) |
|--------------|----------------------|---------------|--|------------------------------|
| AB           | 2                    | 3200          | 2-15   | 1,152                        |
| AD           | 1                    | 1152          | 90   | 5,184                        |
| AM           | 2                    | 2739          | 60-70  | 9,498                        |
| AC           | 1                    | 1280          | 30   | 1,920                        |
| AN           | TBD                  | TBD           | Due to Enterprise shutdown expect significant surface oil slicks near the source | 10,000                       |
| <b>TOTAL</b> |                      |               |  | <b>27,754</b>                |

19K.

Note: Table 1 shows our intentions based upon our observations the day before these actions take place. Size and location of slicks will change. Activities within slick areas e.g., skimming operations, in-situ burning, etc., or weather conditions may require revisions to the actual operational plan implemented.

Rear Admiral James A. Watson  
**June 15, 2010**  
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Attachment 2

# **Nearshore Surface Oil Forecast Deepwater Horizon MC252**

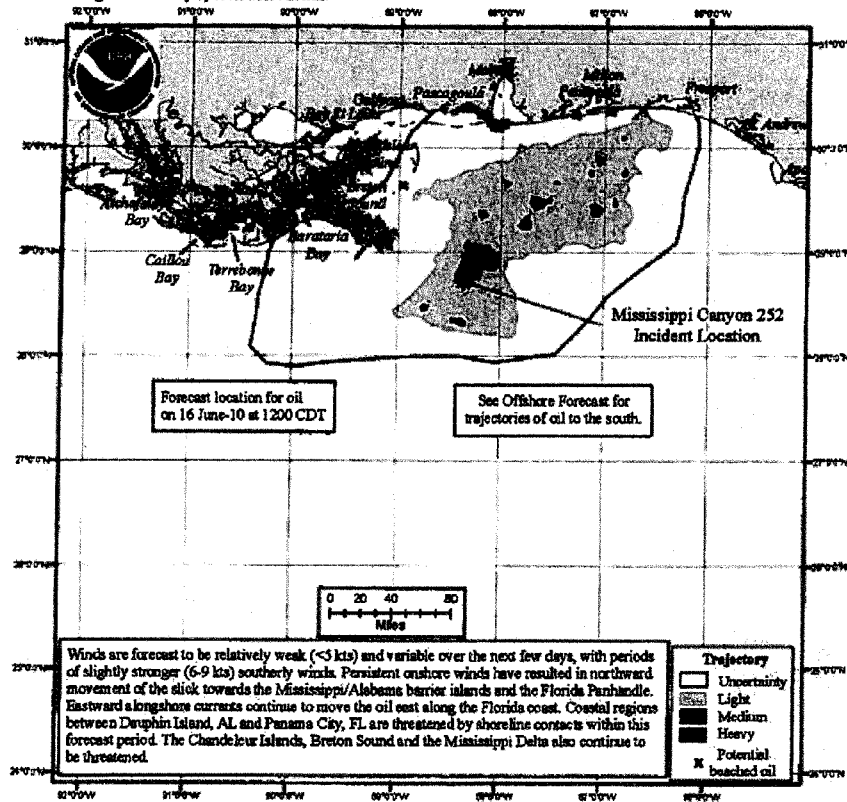
NOAA/NOS/OR&R

Nearshore

Estimate for: 1200 CDT, Wednesday, 6/16/10

Date Prepared: 2100 CDT, Monday, 6/14/10

This forecast is based on the NWS spot forecast from Monday, June 14 PM. Currents were obtained from several models (NOAA Gulf of Mexico, West Florida Shelf/FUSE, TGLO/TAMU, NAVO/NRL) and HFR measurements. The model was initialized from Sunday-Monday satellite imagery analysis (NOAA/NESDIS). The leading edge may contain turbidity that are not readily observable from the imagery (hence not included in the model initialization). Oil near bay inlets could be brought into that bay by local tidal currents.



this scale bar shows the meaning of the distribution terms at the current time

Next Forecast:  
 June 15th PM

## Offshore Skimming Resources

| Date/time             |             |                                |               |                 |              | 15 June 1980 |  |
|-----------------------|-------------|--------------------------------|---------------|-----------------|--------------|--------------|--|
| Destination           | Vessel Name | Voyage                         | Master's name | Location        | ETA          |              |  |
| 452                   | TV1         | MSRC 452 Barge (Van Crosby)    | TP Storage    | Standby         | Pt Jackson   |              |  |
| 570                   | TV1         | MSRC 570 Barge (Crosby Cliner) | TP Storage    | Standby         | White Tail   |              |  |
|                       |             |                                |               |                 |              |              |  |
| <b>Basin Marine</b>   |             |                                |               |                 |              |              |  |
| Receiver              | Vessel      | Assignment                     | Location      | ETA             |              |              |  |
| OC                    | WB2         | Cenac 8                        | Souris        | Standby         | Verica       |              |  |
| SP                    | WB2         | San Jose                       | Souris        | Standby         | Verica       |              |  |
|                       |             |                                |               |                 |              |              |  |
| H                     | WB2         | Delfina Marie                  | Souris        | Standby         | Verica       |              |  |
| R                     | WB2         | Marlene                        | Souris        | Standby         | Verica       |              |  |
| BA                    | WB1         | Brutus                         | Souris        | Standby         | Verica       |              |  |
| SH                    | WB2         | San Hawk                       | Souris        | Standby         | Verica       |              |  |
| <b>Crew/Rs-supply</b> |             |                                |               |                 |              |              |  |
| HL                    | WB2         | Mr. Leroy                      | Shuttle/Rs-s  | Supply Run      | Verica Based |              |  |
| FO                    | WB2         | Tfox                           | Amped Re-sup  | Supply Run      | Verica Based |              |  |
| JP                    | WB2         | Jean Perry (Drop Box)          | Shuttle/Rs-s  | Supply Run      | Verica Based |              |  |
| CS                    | WB4         | Corissa Shane                  | Shuttle/Rs-s  | Supply Run      | Verica Based |              |  |
| KL                    | WB2         | Kirkle Lynn                    | Shuttle/Rs-s  | Supply Run      | Verica Based |              |  |
| EV                    | WB2         | Evensidey                      | NRC Re-pud    | Supply Run      | Verica Based |              |  |
| HW                    | WB2         | Hisa Wymber                    | NRC Re-pud    | Supply Run      | Verica Based |              |  |
| SC                    | WB2         | Ben Charamia                   | Shuttle/Rs-s  | Supply Run      | Verica Based |              |  |
|                       |             |                                |               |                 |              |              |  |
| <b>Inland Storage</b> |             |                                |               |                 |              |              |  |
| 323                   | TV3         | Cenac 323 Barge                | TP Storage    | 21,000 bbl open | Verica       |              |  |
| 324                   | TV3         | Cenac 324 Barge                | TP Storage    | 21,000 bbl open | Verica       |              |  |



Rear Admiral James A. Watson  
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| Non-Source             |                   |                   |              |
|------------------------|-------------------|-------------------|--------------|
| Vessel                 | Assignment/Status | Location          | ETA          |
| Gulf Influence         | FED               | On-scene          | Western Loop |
| Miss Megan (USCG VOSS) | FED               | Enroute           |              |
| Resolve Pioneer        |                   | Unable to contact |              |

Use of Dispersant  
Gallons per day (2200-2200)

|           | Source<br>Actual | Cumulative | Non-source<br>Actual | Cumulative | Subsurface<br>Actual | Cumulative<br>Subsurface | Tests    | 4/30-5/15   |
|-----------|------------------|------------|----------------------|------------|----------------------|--------------------------|----------|---|
|           |                  |            |                      |            | 37,768               | 37,788                   | Tests    | 4/30-5/15   |
|           |                  |            |                      |            | 12,580               | 50,148                   | RITT#1   | 5/15-5/17   |
|           |                  |            |                      |            | 5,250                | 55,398                   | RITT#2   | 5/17-5/18   |
|           |                  |            |                      |            | 100,695              | 158,993                  | RITT#3   | 5/18-5/28   |
| 5/15/2010 |                  |            | 14,208               | 561,699    |                      |                          |          | 10593   |
| 5/16/2010 | 670              | 670        | 0                    | 575,817    | 7,222                |                          | #REF!    |   |
| 5/17/2010 | 6,622            | 7,292      | 6,591                | 582,408    | 8,030                |                          | 0.876422 |   |
| 5/18/2010 | 12,177           | 19,469     | 209                  | 582,617    | 5,250                |                          |          |   |
| 5/19/2010 | 3,352            | 22,821     | 0                    | 582,617    | 3,463                |                          |          |   |
| 5/20/2010 | 1                | 22,822     | 0                    | 582,617    | 14,210               |                          |          |   |
| 5/21/2010 | 0                | 22,822     | 29,892               | 612,509    | 14,400               |                          |          |   |
| 5/22/2010 | 0                | 22,822     | 52,846               | 665,455    | 14,130               |                          |          |   |
| 5/23/2010 | 0                | 22,822     | 18,104               | 683,559    | 14,712               |                          |          |   |
| 5/24/2010 | 0                | 22,822     | 830                  | 684,389    | 14,400               |                          |          |   |
| 5/25/2010 | 0                | 22,822     | 200                  | 684,589    | 12,788               |                          |          |   |
| 5/26/2010 | 7,453            | 30,275     | 229                  | 684,818    | 11,110               |                          |          |   |
| 5/27/2010 | 800              | 31,075     | 200                  | 684,818    | #REF!                | #REF!                    |          |   |
| 5/28/2010 | #REF!            | #REF!      | 10,259               | 695,077    | #REF!                | #REF!                    |          |   |
| 5/29/2010 | #REF!            | #REF!      | #REF!                | #REF!      | #REF!                | #REF!                    |          |   |
| 5/30/2010 | #REF!            | #REF!      | #REF!                | #REF!      | #REF!                | #REF!                    |          |   |
| 5/31/2010 | #REF!            | #REF!      | #REF!                | #REF!      | #REF!                | #REF!                    |          |   |
| 6/1/2010  | #REF!            | #REF!      | #REF!                | #REF!      | #REF!                | #REF!                    |          |   |
| 6/2/2010  | #REF!            | #REF!      | #REF!                | #REF!      | 7,758                | #REF!                    |          |   |
| 6/3/2010  | #REF!            | #REF!      | #REF!                | #REF!      | 16,495               | #REF!                    |          |   |
| 6/4/2010  | #REF!            | #REF!      | #REF!                | #REF!      | 20,851               | #REF!                    |          |   |
| 6/5/2010  | #REF!            | #REF!      | #REF!                | #REF!      | 21,143               | #REF!                    |          |   |
| 6/6/2010  | #REF!            | #REF!      | #REF!                | #REF!      | #REF!                | #REF!                    |          |   |
| 6/7/2010  | 6,746            | #REF!      | 3,995                | #REF!      | 14,105               | #REF!                    |          |   |
| 6/8/2010  | 2,819            | #REF!      | 6,305                | #REF!      | 14,207               | #REF!                    |          |   |
| 6/9/2010  | 2,100            | #REF!      | 0                    | #REF!      | 12,521               | #REF!                    |          |   |
| 6/10/2010 | 1,388            | #REF!      | 4,508                | #REF!      | 10,279               | #REF!                    |          |   |
| 6/11/2010 | 0                | #REF!      | 14,305               | #REF!      | 6,193                | #REF!                    |          |   |
| 6/12/2010 | 3,360            | #REF!      | 8,995                | #REF!      | 4,371                | #REF!                    |          |   |
| 6/13/2010 | 800              | #REF!      | 35,212               | #REF!      | 9,598                | #REF!                    |          |   |
| 6/14/2010 | 33               | #REF!      | 10,703               | #REF!      | 9,689                | #REF!                    |          |   |
| 6/15/2010 | 160              | #REF!      | 2,808                | #REF!      | 11,578               | #REF!                    |          |   |
| 6/16/2010 | 213              | #REF!      | 13,380               | #REF!      | 9,152                | #REF!                    |          |   |
| 6/17/2010 | 300              | #REF!      | 12,123               | #REF!      | 5,982                | #REF!                    |          |   |
| 6/18/2010 | 147              | #REF!      | 15,564               | #REF!      | 7,642                | 436,690                  |          |   |
| 6/19/2010 | 5,776            | #REF!      | 17,780               | 851,415    | 17,780               | 454,440                  |          |   |
| 6/20/2010 | 4,173            | #REF!      | 15,400               | 866,815    | 13,085               | 468,135                  |          |   |
| 6/21/2010 | 862              | 93,118     | 10,355               | 877,173    | 14,583               | 482,718                  |          |   |
| 6/22/2010 | 0                | 93,118     | 2,008                | 879,181    | 10,046               | 492,764                  |          | no subsea disruptions   |
| 6/23/2010 | 0                | 93,118     | 5,099                | 884,280    | 8,865                | 501,630                  |          | some subsea disruptions   |
| 6/24/2010 | 0                | 93,148     | 21,088               | 905,368    | 13,806               | 515,436                  |          | no subsea disruptions   |
| 6/25/2010 | 0                | 93,348     | 4,653                | 910,021    | 12,085               | 527,543                  |          | no subsea disruptions   |
| 6/26/2010 | 0                | 93,348     | 23,022               | 933,023    | 12,835               | 540,378                  |          | no subsea disruptions   |
| 6/27/2010 | 0                | 93,348     | 6,623                | 939,646    | 11,982               | 552,360                  |          | no subsea disruptions   |
| 6/28/2010 | 0                | 93,348     | 0                    | 939,646    | 13,195               | 565,555                  |          | no subsea disruptions   |
| 6/29/2010 | 3                | 93,351     | 0                    | 939,646    | 11,484               | 576,739                  |          | no subsea disruptions   |
| 6/30/2010 | 0                | 93,351     | 0                    | 939,646    | 13,474               | 590,213                  |          | no subsea disruptions   |
| 7/1/2010  | 0                | 93,661     | 17,852               | 957,498    | 10,758               | 600,971                  |          | no subsea disruptions   |
| 7/2/2010  | 568              | 94,229     | 12,737               | 970,235    | 11,505               | 612,476                  |          | no subsea disruptions   |
| 7/3/2010  | 1,227            | 95,596     | 0                    | 970,235    | 11,363               | 623,839                  |          | 1.5 hrs subsea disruption reported  |
| 7/4/2010  | 79               | 95,645     | 3,000                | 973,235    | 10,323               | 634,162                  |          | no subsea disruptions   |
| 7/5/2010  | 0                | 95,558     | 803                  | 974,038    | 11,849               | 645,811                  |          | no subsea disruptions   |
| 7/6/2010  | 473              | 96,032     | 0                    | 974,038    | 11,654               | 657,465                  |          | no subsea disruptions   |
| 7/7/2010  | 245              | 96,277     | 1,000                | 975,038    | 11,770               | 669,244                  |          | no subsea disruptions   |
| 7/8/2010  | 0                | 96,277     | 0                    | 975,038    | 11,553               | 680,797                  |          | no subsea disruptions   |
| 7/9/2010  | 0                | 96,277     | 0                    | 975,038    | 11,873               | 692,470                  |          | no subsea disruptions   |
| 7/10/2010 | 0                | 96,277     | 0                    | 975,038    | 13,210               | 705,680                  |          | several interruptions throughout reporting period, 26 hr reporting period |
| 7/11/2010 | 0                | 96,277     | 0                    | 975,038    | 15,420               | 721,100                  |          | < 0.5 hrs of interrupted subsea injection reported                        |
| 7/12/2010 | 0                | 96,277     | 0                    | 975,038    | 14,038               | 735,138                  |          | 3 hr interruption during stack install                                    |
| 7/13/2010 | 0                | 96,277     | 999                  | 976,037    | 13,597               | 748,135                  |          | no subsea disruptions   |
| 7/14/2010 | 0                | 96,277     | 0                    | 976,037    | 13,745               | 761,881                  |          | 1 interruption for 1.25 hrs   |
| 7/15/2010 | 0                | 96,277     | 0                    | 976,037    | 8,381                | 771,272                  |          | injection stopped at 1420 when well was shut in                           |
| 7/16/2010 | 0                | 96,277     | 0                    | 976,037    | 0                    | 771,272                  |          |   |
| 7/17/2010 | 0                | 96,277     | 0                    | 976,037    | 0                    | 771,272                  |          |   |
| 7/18/2010 | 0                | 96,277     | 0                    | 976,037    | 0                    | 771,272                  |          |   |
| 7/19/2010 | 0                | 96,277     | 200                  | 976,237    | 0                    | 771,272                  |          |   |

\*\*\* NOTE: Amounts are approximate, based on best available information, and subject to periodic reconciliation which results in adjustment to cumulative numbers.  
Subsea disruption info added to data beginning 6/21/2010

ENCLOSURE 12



National Incident Commander  
Deepwater Horizon Response

2100 Second Street, S.W.  
Washington, DC 20593-0001  
Staff Symbol: NIC  
Phone: (202) 372-1710  
Fax: (202) 372-1933

16451  
OCT 01 2010

The Honorable Edward J. Markey  
Chairman, Subcommittee on Energy and Environment  
2125 Rayburn House Office Building  
Washington, DC 20515-6115

Dear Mr. Chairman:

This responds to your letter of July 30, 2010 in which you requested information on dispersant use in response to the Deepwater Horizon spill. It follows my preliminary response of August 20 as well as a briefing to your staff by my National Incident Command staff on September 8.

As a preliminary matter, dispersant application occurred through the following means: (1) subsurface application at the spill source, (2) surface application at the spill source by vessel, and (3) surface application in other locations by airplane (also referred to as "aerial application").

The following are specific responses to questions in your July 30, 2010 letter.

*Q1. Almost all of the exemption requests submitted by BP cite the presence of VOC emissions and large surface oil slicks as being reason for applying for an exemption to the May 26 Directive. Yet the Directive clearly states that an exemption should only be granted in "rare" circumstances. Why does the USCG believe that the presence of oil and VOCs are rare circumstances during a leak that releases tens of thousands of barrels of oil per day?*

A. The Directive did not clearly explain the distinction between using dispersants as a mitigation tool to stop the spread of oil in the Gulf, and using it to protect human health and safety.

Addendum 3 to the Directive, dated May 26, established the objective of minimizing dispersant use and the guidance to only grant exemptions in rare circumstances was the method to achieve this. However, dispersant use decisions were dictated by operational realities such as whether the presence of Volatile Organic Compounds (VOCs) and oil on the surface was a "rare" event primarily governed by the effectiveness of wellhead containment, subsurface dispersant use, sea state and weather conditions. Additionally, when Addendum 3 was written, flow rate estimates were between 12,500 and 21,500 barrels per day based on an interim report from the Flow Rate Technical Group, with earlier less technical estimates being significantly lower. Estimates were later increased and ranged between 35,000 and 60,000 barrels per day explaining the VOC and oil conditions encountered.

Dispersants were only one of several response tools used to deal with the spill. The May 26 Directive was intended to focus BP's efforts on using the full range of available tools to respond to the spill, including skimming, booming, and *in situ* burning, and in support of ensuring worker health and safety at the critical source control site. It is important to note that on May 26, BP was actively engaged in the Top Kill operation and simultaneously drilling the relief well. The goal of dispersants was to be used as a response tool and also as a safety tool to ensure critical source control operations were not disrupted. The overall goal of the Directive was to decrease the use of surface dispersants as a response tool, and to decrease the overall volume use of dispersants thru sub-surface injection making their use as a surface response tool a rare event. In large part, I believe the Directive accomplished this goal.

What the Directive did not do was to limit the use of dispersants as a tool to protect human health and safety, and it would have been unwise to do so. A Federal On-Scene Coordinator (FOSC) is guided both by common sense and the plain letter of the National Contingency Plan (NCP) to make safety of human life the top priority during every response action; the NCP makes the FOSC responsible for the safety of all persons responding to a spill.

The difficult circumstance you identified in your letter—the balance a FOSC must strike between limiting the use of dispersants and sending responders closer to a hazardous environment—is a difficult one, but one that must always be struck in favor of human health and safety.

Surface application of dispersants in other locations by airplane was only used when other recovery methods were insufficient or ineffective. Surface application of dispersants at the spill source by vessel was prompted by VOC levels that posed a health and safety threat to response workers. The rare circumstances your question appears to address, concerning the May 26 Directive, was an intentional use of the general meaning of the terminology – simply stated, it is the Coast Guard's chief objective to minimize the consequences of pollution and to protect our natural environmental and economic interest. The May 26 Directive granted exceptions on rare circumstances; the Directive never suggested that the presence of oil and VOCs were rare circumstances.

*Q2. The exemption requests often also discuss the inadequacy of skimming operations as a rationale for the use of dispersants. Wouldn't skimming always be inadequate to fully combat such a large oil leak? Why are the inadequacies associated with skimming considered to be "rare" by the USCG?*

A. Skimmers are effective tools for responding to oil spills. However, like every tool, they have windows of effectiveness within which they operate well, and outside of which their effectiveness drops off significantly.

Skimming as well as *in situ* burning are limited by weather conditions, location of resources, and the size and density of the oil slick. In cases where the weather, availability of resources, size or density of oil do not accommodate other means of spill cleanup and mitigation, dispersants become the only viable option to ensure the oil does not reach environmentally sensitive areas. Skimming, booming, and *in situ* burning played major roles in Deepwater Horizon cleanup efforts accounting for millions of gallons of oil either burned or collected. Dispersants are a tool used when and where appropriate.

Q3. *In addition to the requests submitted by BP, from June 8-July 9 almost daily requests for exemptions to the May 26th Directive were submitted by Houma Unified Command, which consists of USCG and other personnel and reports to the Federal On Scene Coordinator. In most of the letters submitted by Houma Unified Command, the volume of dispersant requested was 3-6 times higher than the volume requested by BP. In each instance the request was approved by the Federal On Scene Coordinator, though at times the amount requested was modified.*

Q.3.a. *What is the relationship between BP and Houma Unified Command?*

A. BP is a member of the Houma Unified Command (HUC) which, together with a State of Louisiana On-Scene Coordinator, was led by a Coast Guard Federal On-Scene Coordinator Representative (FOSCR). BP is also a member of the Unified Area Command (UAC), led by a Coast Guard FOSC who oversaw operations of the HUC.

Q.3.b. *What is the relationship between the Federal On Scene Coordinator (USCG) and Houma Unified Command?*

A. The HUC was one of four Incident Command Posts (ICP) that reported to the Unified Area Command (UAC) located in New Orleans, LA. The FOSC, as the lead of the UAC, oversees response policy, critical resource allocation, and general response activities of the HUC at the operational level.

Q.3.c. *Does the fact that Houma Unified Command (which consists of USCG and other personnel), repeatedly requested and received permission from other USCG personnel to deviate from the USCG's own May 26 directive mean that the USCG effectively decided to ignore or simply not enforce its own directive? Why or why not?*

A. Both the FOSC and HUC were committed to reducing use of dispersants to the minimum amount necessary as indicated in Addendum 3 to the Directive. The communications between Coast Guard personnel at the HUC and UAC regarding dispersant use is evidence of the existence of a healthy command and control structure envisioned by the NCP.

The local experts working in the HUC advised the UAC about threats which were presented as oil approached coastal areas, and jeopardized sensitive marsh areas and beaches. Based on their expert knowledge of the area, the HUC sought and received permission from the FOSC to employ dispersant in order to protect those sensitive areas and beaches along with the health and safety of the responders.

Q.3.d. *Does the USCG Federal On Scene Coordinator take into consideration the volume of dispersant approved to be used by Houma Unified Command when approving the volume of dispersant requested by BP, and vice versa? If so, how, and if not, why not?*

A. Yes, the FOSC considered requests from both BP and the HUC when making the decision to use dispersants. In addition, the FOSC balanced the requests with the current operational conditions, the availability and feasibility of other oil spill response technology, and other factors such as worker health and safety to determine an effective course of action.

*Q.4 In 48 days, 74 requests for exemptions to the May 26 Directive were made by either BP, Houma Unified Command, or both. In all but 10 cases, the USCG approved the exemption without modifying the daily maximum quantities of dispersant use requested. In one of the 10 modifications occurring on June 26, the USCG actually increased the maximum dispersant that was approved for use by Houma Unified Command from its request of 30,600 gallons to 43,000 gallons.*

*Q.4.a. How does the USCG evaluate whether the quantities of dispersant proposed are justified?*

A. Quantities of dispersant are based on the number of oil slicks, their size, and the estimated percentage of dispersible oil. Taking these factors into consideration and applying a desired dispersant to oil ratio, responders can estimate the amount of required dispersant.

Please refer to paragraph four of my letter of August 20, 2010 for additional discussion on this issue.

*Q.4.b. What criteria does the USCG use to evaluate whether the justification provided in an exemption request is sufficient to warrant an exemption?*

A. Many criteria are used to evaluate exemption requests including but not limited to the presence of dispersible oil, size of oil slicks, weather conditions, availability and feasibility of other response methods, and other factors (such as worker health and safety). In addition, specific events at the well head such as the temporary loss of containment were considered in determining if exemptions were necessary.

Exemptions were considered on a case by case basis. All exemptions were granted to make appropriate adjustments where necessary to maximize a successful response.

*Q.4.c. What communications does the USCG have with other federal agencies, such as the EPA, when evaluating these requests and approving exemptions?*

A. The FOSC relied on the advice of the EPA, National Oceanic and Atmospheric Administration (NOAA) Scientific Support Coordinator, and the Departments of Interior and Commerce as well as State representatives at the Unified Command in making dispersant use decisions during Deepwater Horizon response operations. In addition, in late May over 50 scientists, engineers and spill response practitioners from numerous organizations attended a meeting to provide input to the RRT on the use of dispersants the Deepwater Horizon response and identify possible new monitoring protocols of dispersant application.

*Q.5. From June 10 – July 3, there were 8 days where the USCG substantially reduced the requested dispersant exemption volume. For example, on June 10, Houma Unified Command requested permission to apply up to 32,000 gallons, which was reduced to 21,000 gallons by the USCG. Similarly on June 12, the request to use 38,160 gallons was reduced to 7,000 gallons by the USCG. But the next day, on June 13, Houma Unified Command requested permission and was approved to apply up to 36,000 gallons of dispersant on the surface of the Gulf.*

*Q.5.a. Why did the USCG reject the requests on June 10 and June 12, and then approve essentially the same request on June 13?*

A. Between June 10 and July 3, ICP Houma requested—and the FOSC approved—use of various volumes of dispersants. The decision to approve dispersant volumes in general, and specifically volumes different than those requested, was within the FOSC's discretion. The FOSC based dispersant volume decisions upon conditions present at the time, including: size of oil slicks, mechanical or other means for removal, weather conditions, and sea state. Any of those conditions would vary day to day, and the fact that a request was denied on one day and an identical or similar request approved on a subsequent day would be based on conditions present on each particular day.

*Q.5.b. How does the USCG determine the maximum amount of dispersant use that is justified to be used on any particular day?*

A. The UAC determined that a maximum daily application volume (calendar day) of 6,000 gallons for vessel application of surface dispersants at the spill source was appropriate unless more was required to control VOCs. The UAC made its determinations based on information it received on a daily basis from spotter aircraft (and eventually satellite imagery) about the size and trajectory of the spill and the potential for harm to sensitive areas and beaches. Potential oil targets were analyzed by size, location, and dispersible oil composition which provided a basis for the amount of dispersant needed. The overall use of dispersants was also influenced by the availability, on a given day of other response mechanisms, such as mechanical recovery or *in-situ* burns.

*Q.5.c. Does the USCG take into consideration previous approvals when deciding whether a daily exemption is to be granted? How does the presence of inclement weather factor into the process when deciding if an exemption request should be approved?*

A. The UAC issued approval based on operational requirements each day. When issuing approvals, the UAC considered the application of other technology, the impact on the environment, and well-being of the human and animal population. The operational requirements of each day could be influenced by previous approvals. For example, previously approved dispersants might have reduced current operational requirements by decreasing the oil slicks. Weather conditions played an important role in all oil spill response operations. Weather could hamper mechanical recovery such as skimming, as well as *in-situ* burning. Aircraft applying dispersants also had operation limitations based on weather parameters; in some cases, dispersant applying aircraft operations were interrupted during inclement weather.

*Q.6 In several instances BP submitted advance requests for permission to apply 6,000 gallons per day of dispersant to the ocean surface for seven days, with a caveat that this limit might also be exceeded as required. The USCG approved these requests, essentially allowing BP to use as much surface dispersant as it wanted to. In fact, on June 4 and again on June 11, 16, 17, 20 and July 1 BP roughly doubled the 6,000 gallon maximum 'limit' (for example, according to materials provided by BP to Congressional staff, on June 4th, BP applied 13,701 gallons, and on June 11th BP applied 14,305 gallons).*

A. The interpretation of the BP data in question six appears to lack a key distinction; total surface dispersant use equals the amount of dispersant applied at the well site plus the amount used by aircraft to mitigate threatening oil slicks elsewhere in the Gulf. The 6,000 gallon limit was for surface application at the spill source by vessel to mitigate VOCs. According to the question, BP exceeded a 6,000 gallon cap on several occasions by roughly doubling the limit. Based upon a review of dispersant data, the 6,000 gallon limit referred to surface application at the spill source by vessel to lower VOC vapors, not necessarily the total amount of dispersant used in the Gulf of Mexico on a given day. For example, on June 11 the question claims BP exceeded the 6,000 gallon cap by over 8,000 gallons for a total of 14,305. However, the 14,305 gallons refers to the total amount used in the Gulf, accounting for the aerial application of dispersant as well as the amount used at the well site. On June 20, vessels at the well site used 4,173 gallons to suppress VOC vapors in addition to the 15,403 gallons used by aircraft targeting oil slicks in the Gulf of Mexico. As a result, total surface dispersant use for June 20 total less than 20,000 gallons.

The manipulation of the lower marine riser package on June 3 precluded the application of subsurface dispersant resulting in an increase of VOC vapors at the surface. To lower the vapor levels, BP used 13,701 gallons of dispersant at the well site. Since no aerial dispersant was deployed on June 4, the amount of dispersant used at the well site equaled the totaled amount of surface dispersant applied on the calendar day, which was 13,701.

*Q.6.a. Why did the USCG approve a request that essentially gave BP permission to use as much dispersant as it wanted to for a 7 day period?*

A. The NCP Subpart J §300.910 (d) specifically provides the FOSC with the authority to authorize the use of dispersant, when, in the judgment of the FOSC, the use of the dispersant is necessary to prevent or substantially reduce a hazard to human life. During the seven-day period in question, if the VOC levels exceeded Air Monitoring Plan limits, the FOSC authorized additional surface application of dispersants at the spill source to lower VOC levels, which would prevent or substantially reduce health hazards that threatened responders on scene.

*Q.6.b. Did the USCG take into account the actual volume of dispersants that were used when deciding if subsequent exemptions would be approved? If so, how? If not, why not?*

A. Information regarding the volume of dispersants used at the spill source was made available to the FOSC. When BP submitted weekly Source Control Surface Dispersant Plans to the FOSC, BP detailed the average daily volume of dispersants applied at the spill source for the previous period and the maximum daily application of dispersants at the spill source for the previous period.



*Q.6.c. How were decisions about volume of dispersants in excess of the maximum exception made? Did BP inform the USCG in advance of exceeding the 6,000 gallon limit on any date on which it significantly exceeded the 6,000 gallon limit that it planned to do so, and how much it would likely apply on those days? If so, did the USCG approve the use of such high volumes? Please provide all documents, including phone logs and emails, related to BP's surface application of dispersants on each day that BP significantly exceeded the 6,000 gallon limit (at minimum for its use of surface dispersants on June 1, 4, 11, 13, 14, 16, 17, 20, 21, and July 1).*

In the case of surface dispersants applied at the spill source, the concentration of VOC vapors at the well site necessitated the use of dispersant above the 6,000 gallon expected maximum daily limit. Consideration to approve exemptions starts with the fundamental Coast Guard policy: our top operational priority has always been to ensure the safety and welfare of citizens and response personnel. When considering the use surface dispersant application at the spill source to protect worker health and safety, the question of the potential consequences of not implementing sufficient safety measures is also raised.

Based on an analysis of dispersant data, BP exceeded the 6,000 gallon limit of vessel-applied dispersant on three occasions, May 28, June 4, and June 7, after approval of Addendum Three on May 26. On each occasion, work around the well head interrupted oil containment efforts resulting in an increase of VOCs.

*Q.6.d. How did the USCG respond to information indicating that BP violated the already-exempted Directive by exceeding the recommended maximum daily volumes to be used?*

A. The FOSC expected BP not to exceed the 6,000 gallon daily limit. However, if hazardous conditions persisted, BP was permitted to exceed the daily limit only to mitigate risks to workers. In addition, aerial application of dispersants away from the spill site was used when mechanical recovery and *in-situ* burning were not possible due to weather and sea state.

*Q.7. BP has also contradicted information it submitted elsewhere regarding its use of surface dispersants. On June 16, BP COO Doug Suttles sent a letter to Rear Admiral James A. Watson, the Federal On Scene Commander, requesting that BP be pre-authorized to use 6,000 gallons of surface dispersant per day for June 17-23. He indicated that the maximum daily application of surface dispersant in the days preceding June 16 was 3,360 gallons on June 12. However, an examination of the amounts BP provided to Congressional recipients in its daily "Gulf of Mexico Oil Spill Response Updates" (see Table 1) indicates that on June 11, BP stated that it had applied 14,305 gallons of dispersant on the surface, on June 13, it had applied 36,000 gallons and on June 14, 10,706 gallons. On June 22, BP COO Doug Suttles sent a letter to Rear Admiral James A. Watson requesting that BP be pre-authorized to use 6,000 gallons of surface dispersant per day for June 24-30. In the letter, Mr. Suttles claimed that from June 17-21, the average daily volume applied to the surface was about 2,200 gallons with a maximum of 5,776 gallons on June 19. However, an examination of the surface dispersant totals BP provided to Congressional recipients in its daily "Gulf of Mexico Oil Spill Response Updates" (see Table 1) indicates that on June 17, BP applied 12,423 gallons on the surface, on June 20, it applied 19,576 gallons, and on June 21, it applied 11,217 gallons. On July 5, 2010, Mr. Suttles claimed that the maximum surface dispersant*

*applied from July 1-5 was 1,473 gallons, yet on July 1 BP provided an amount of 17,852 gallons to Congress.*

A. Your question reflects a difference between the amounts of dispersant requested/used at the well site by vessel application to control VOC levels versus the dispersant used to mitigate oil impacts using aerial dispersant application. For example, question seven indicates BP applied 36,000 gallons of dispersant on June 13. However, Houma Unified Command correspondence to the FOSC suggested there was a request to use 36,000 gallons of aerial dispersant of which roughly 35,000 gallons was actually deployed. Data indicates BP used less than the 6,000 gallon expected limit at the well site on June 13.

*Q.7.a. How did the USCG verify the information provided to it by BP, since that information is so clearly at odds with the volumes of surface dispersants that BP has informed Congress that it used?*

A. Again, the difference in dispersant quantities reflects a difference at the well site to control VOC levels versus the dispersant used by aerial application to break up surface slicks and mitigate potential shoreline impacts. There did not appear to be any significant inconsistencies made by BP when comparing well site dispersants with well site authorizations.

*Q.7.b. Has the USCG ever attempted to verify the information provided to it by BP related to the amounts of dispersants that were actually applied? If so, please provide all such documentation. If not, why not?*

A. As part of the response effort, Coast Guard aerial observers conducted over flights monitoring BP operations at the well site. The UAC carefully monitored the aircraft tank levels to verify dispersant amounts used. Tank levels on surface vessels were recorded and checked. A response of this magnitude generates a tremendous amount of documentation. All records from this response are being forwarded to a central repository in Mandeville, Louisiana, where they are being sorted and catalogued.

*Q.7.c. Was BP providing inaccurate information to the USCG or to the Congress? If neither, then how do you account for these discrepancies?*

A. The discrepancies result from different interpretations of dispersant data. On a daily basis, BP requested and received permission from the FOSC to use dispersant to suppress VOC emissions at the well site. Simultaneously, the FOSC authorized dispersant use in other areas of the Gulf of Mexico. When tabulated, however, the distinction between the use of dispersants at the well site and other areas of the Gulf fades. Many of the daily totals discussed in this letter concern the aggregate daily use of dispersant, not just the total utilized by BP at the well site. Because the use of dispersant in the oiled areas of the Gulf is typically greater than use at the well site, it would appear that BP often exceeded the expected 6,000 gallons per day.

*Q.8 Table 1 contains daily information related to the amount of surface dispersants requested to be applied by both BP and Houma Unified Command, how much was approved by the USCG, and available information provided by BP and the Deepwater Horizon National Incident Command as to how much was actually used. As you can see, the totals do not add up, for example, on June 13, BP states that it used 36,000 gallons on the surface, but the Deepwater Horizon total cites only 13,000 gallons. What totals do the Deepwater Horizon amounts refer to? Do they include the BP totals? How do you explain the discrepancies associated with the daily reported amounts?*

A. Dispersant data on the Deepwater Horizon Unified Command website can be found in two locations. Data posted on the Deepwater Horizon website displays a running total of both surface and subsurface dispersant use during all Deepwater Horizon clean up operations. Surface and subsurface totals are combined to provide a grand total of dispersant use.

Under the "Current Ops" menu, the daily "Operations and Ongoing Response" reports indicate the amount of dispersants applied by calendar day. Under the "News/Info" menu, the daily "Ongoing Administration-wide Response to the Deepwater BP Oil Spill" reports also provide dispersant information but over a slightly different time period. The "Ongoing Administration-wide Response" reports publish information in the evening for the past 24 hours. Because the report period straddles calendar days, direct comparisons of data with information tabulated on a calendar day format, as is the case with the BP data and the information in the "Operations and Ongoing Response" reports, cannot be made. However, daily computations from the "Operations and Ongoing Response" reports are accomplished by subtracting the cumulative total of one day from the cumulative total from the previous day.

Examining data over the same time period, in this case a calendar day, may eliminate confusion. For example, according to Table 1, BP reported a total of 36,000 gallons of dispersant used on June 13 and the Deepwater Horizon website cited only 13,000 gallons. However, in comparing "Operations and Ongoing Response" calendar day statistics with the BP data, the numbers correlate. The "Operations and Ongoing Response" report indicated that total surface dispersant use for June 13 was 37,000 gallons, comparable to BP's assessment of 36,000 gallons. The following day, June 14, the "Operations and Ongoing Response" stated 12,000 gallons were used which compares to BP's total of 11,000 gallons. Daily computations from the "Operations and Ongoing Response" reports are accomplished by subtracting the cumulative total of one day from the cumulative total from the previous day.

To promote transparency during this historic spill response, the UAC promptly posted dispersant application data for public consumption. One challenge to making data quickly available is the presence of some discrepancies between amounts, which can be reconciled over time. The dispersant application process – from request to approval to deployment – can be spread out over hours or days, complicating efforts to obtain short fused accurate totals without the benefit of a reconciliation process.

*Q.9. On May 30, 2010 BP requested and received retroactive authorization for surface dispersant application that occurred on May 28 without prior USCG approval. On June 6, BP requested and received retroactive authorization for exceeding the maximum daily amount of subsurface dispersant (15,000 gallons) on two separate occasions.*

*Q.9.a. Has the USCG determined why BP failed to obtain advance authorization for the use of dispersant on these occasions?*

A. With regard to the May 30 request, the FOSC retroactively authorized surface application of dispersant at the spill source. BP did not request advance authorization for surface application of dispersant at the spill source because of miscommunication within the response organization following the new Directive which was issued two days earlier. The departure from the limit occurred to lower VOC emissions at the well site. On June 6, the FOSC retroactively authorized subsurface application of dispersant at the spill source following the discovery of a faulty meter used to monitor and report subsurface application. BP set the meter flow rate to coincide with the 15,000 gallons per day dispersant limit, but later learned the actual flow rate was higher than expected thus causing an overage.

*Q.9.b. Why did the USCG decide to make these retroactive authorizations?*

A. On those limited occasions, the FOSC provided authorizations to account for the pace of operations, equipment malfunctioning and the challenges of implementing a new operational policy in the middle of an emergency response.

*Q.9.c. What is the point of issuing a Directive requiring advance authorization prior to the use of surface dispersants if the USCG just issues retroactive authorizations in instances in which BP has failed to obtain the requisite advance authorizations?*

A. The FOSC memorialized verbal authorizations to officially record the use of dispersant during the first few days of the order and reaffirm BP's accountability in conforming to the May 26 Directive. The retroactive authorizations occurred because of two exceptional circumstances and were not standard practice.

*Q.10. On June 4, the USCG approved a BP exemption request to apply 23,000 gallons of dispersant subsurface at the site of the well head. This request was made because it was in excess of the May 26<sup>th</sup> Directive that set the maximum daily limit for subsurface application of dispersants at 15,000 gallons per day. The reason for this exemption approval was noted to be a result of placement of the containment cap, which disrupted dispersant flow. One June 19, another exemption request for subsurface application was submitted; this request was approved without an upper limit for application. BP's rationale for an increase in subsurface application was because of high VOC emissions at the surface.*

*Q.10.a. Why did the USCG approve this June 19<sup>th</sup> request without an upper limit?*

A. The upper limit on the June 19 authorization was 21,600 gallons (calculated by multiplying 15 gallons per minute by 60 minutes by 24 hours).

*Q.10.b. Why are VOC emissions considered to be an acceptable rationale for approval of both an increase in subsurface and surface use of dispersants?*

A. High levels of VOCs result in hazardous working conditions. Surface and subsurface dispersants are two options for minimizing risks to responders. Each method has trade-offs and operating envelopes.

Q.10.c. *How did the USCG calculate whether the proposed volume increase requested by BP for subsurface application was justified? For example, what flow rate assumptions did BP and the USCG use to determine these volumes and on what basis were those assumptions made?*

A. As part of the Flow Rate Technical Group established by the National Incident Commander, government and independent scientists estimated the most likely flow rate of oil to be between 35,000 and 60,000 barrels per day. Given that the maximum allowable subsurface dispersant application at the spill source was 15,000 gallons a day, the dispersant to oil ratio was in the range of approximately 1:100—below the recommended optimum of 1:20 to 1:50. In the end, it was the constraint in the directive that limited the dispersant-to-oil ratio, rather than the recommended dispersant-to-oil ratio targets. The overall use of dispersants is also influenced by the availability, on a given day of other response mechanisms, such as mechanical recovery or in situ burns.

Q.10.d. *On June 19, the USCG approved a surface exemption request made by BP and a separate request made by Houma Unified Command, totaling 22,400 gallons of surface dispersant. That same day, USCG also approved a subsurface exemption request with no upper limit on volume. Did the USCG take into consideration surface application? If so, please describe the process for such consideration, and if not, why not?*

A. In making a decision to employ dispersants, consideration was given to both surface and subsurface dispersants, their effectiveness, and depends on other factors such as weather conditions, status of resources, and location of dispersible oil. On June 19, pursuant to a request from the Houma Unified Command, the FOSC authorized use of 16,400 gallons of surface dispersant in addition to the 6,000 gallons of surface dispersant authorization at the well site to control VOCs. Of the 22,400 gallons authorized, only about one-third of surface dispersant was deployed. About 17,000 gallons of the 21,600 gallon ceiling of subsurface dispersant was used.

Q.11. *On June 22, 2010, in response to a letter received from the Houma Incident Commander, the USCG wrote to the Regional Team, which is comprised of representatives from sixteen federal departments, requesting that a new Directive on the dispersant approval process be developed to supersede the May 26<sup>th</sup> Directive. This new Directive was supposed to allow "real-time decisions" to be made regarding the volume of dispersants used and "should in no way condition the use of dispersants on precise data" regarding capability of other mitigating methods. In response to this request the EPA Region 6 proposed a new dispersant deployment procedure which included review and approval by EPA prior to dispersant deployment.*

Q.11.a *Did the USCG request this new Directive because it was concerned that the old Directive to approve changes only in "rare" circumstances was consistently being violated? If not, why was the new Directive requested?*

A. A new Directive was considered after realizing the amount of oil discharged from the well was significantly greater than initially thought. Responders encountered a new reality in a dynamic response requiring frequent dispersant use to mitigate the growing accumulation of oil. The May 26 Directive was predicated on the assumption that the flow of oil into the Gulf of Mexico was about 5,000 barrels per day. However, based on information from the Flow Rate Technical Group, the actual flow of oil was several times larger than first estimated. This significant increase spurred responders to consider reassessing the strategy for the use of dispersants as well as other oil recovery methods.

*Q.11.b On or around June 24, Houma Unified Command evidently requested pre-approval to apply 5,000 gallons of dispersant on the surface per day going forward. A memo from EPA's Samuel Coleman initially concurred with the request, but a second memo subsequently rescinded the concurrence and instead proposed an alternate process which required review and concurrence by EPA. What was the resolution of this matter? Please provide all documents, including phone logs and emails, related to the process by which approvals to use surface dispersants by Houma Unified Command occurred.*

A. On June 25, 2010, the EPA concurred with the FOSC to permit ICP Houma to approve up to 5,000 gallons of aerial dispersant per day provided there was documentation of appropriate targets and that the appropriate monitoring took place. The EPA concurrence with FOSC was in effect as of June 25, and remained in effect until further notice by EPA. For aerial application of volumes over the 5,000 gallon per day limit, the existing concurrence process between FOSC and EPA remained in effect.

*Q.11.c. Was the EPA procedure for dispersant approval proposed in lieu of the USCG proposal adopted? If yes, why wasn't this Addendum made public on the EPA and USCG's website as an Addendum to the May 26<sup>th</sup> Directive? If not, why not, and was the new Directive suggested by the USCG adopted instead?*

A. The proposed EPA process submitted by Mr. Coleman on June 25, 2010 was not adopted. The documentation shows that by June 25, the EPA concurred with the FOSC to permit Houma to approve up to 5,000 gallons of aerial dispersant per day.

*Q.11.d Did any other Regional Response Team members provide an alternate Addendum proposal? If so, please provide all documentation thereof.*

A. There is no documentation that any other RRT agencies provided an alternative proposal.

*Q.11.e. Please provide all documents, including phone logs and emails, related to the USCG request to develop a new Addendum to address the dispersant approval process.*

A. As previously mentioned, a response of this magnitude generates a tremendous amount of documentation. We will forward any responsive documentation via separate correspondence.

I remain as committed as you to ensuring a safe and effective response to the Deepwater Horizon oil spill with appropriate regard for the health of the environment. The questions raised in your letter have merit, but are challenging to answer in detail during the active portion of a response of this magnitude. I anticipate more information will become available during the deliberative process of compiling the FOSC report, a requirement of the NCP. Yet to be responsive to your important questions, my staff has provided you with the most accurate and current information with the understanding that more information will be available as after-action studies progress.

Sincerely,



T. WALLER  
Admiral, U. S. Coast Guard (Ret.)  
National Incident Commander

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 ROBERT E. LATTI, OHIO

August 11, 2010

Mr. Lamar McKay  
 President and CEO,  
 BP America, Inc.  
 501 Westlake Park Boulevard  
 Houston, Texas, 70779

Dear Mr. McKay:

On August 2, 2010, the Deepwater Horizon Unified Command released updated flow rate estimates for the amount of BP oil that flowed into the Gulf of Mexico prior to the initial capping of the Deepwater Horizon well on July 15, 2010. These estimates reflect the collaborative work and discussions of the National Incident Command's Flow Rate Technical Group (FRTG), led by United States Geological Survey Director Marcia McNutt, and a team of Department of Energy scientists and engineers, led by Energy Secretary Dr. Steven Chu.

According to the FRTG estimate, 53,000 barrels of oil per day were leaking from BP's well immediately preceding its closure using the capping stack. However, at the beginning of the spill, 62,000 barrels per day were leaking from the well. Because the well flowed for 87 days, approximately 4.9 million barrels flowed into the gulf. The FRTG estimate has a plus or minus 10 percent uncertainty range.

As you know, BP is a participant in the Unified Command and assisted in the preparation of these estimates. BP has not publicly indicated disagreement with these estimates.

Under current law, BP will be assessed fines for each barrel of oil spilled. These fines will range from a minimum of \$1100 per barrel to up to \$4300 per barrel. The amount of oil spilled will also be used in assessing the extent of natural resource



Mr Lamar McKay  
Page 3 of 3

damages. The 53,000-62,000 barrel per day figure far exceeds BP's initial estimates of 1,000-5,000 barrels per day and much more closely resembles the so called "worst case" scenario cited by BP officials of 60,000 barrels per day.

I am writing to ask whether BP will accept this more definitive FRTG estimate as the basis for its per barrel spill liability and for other legal purposes, including the assessment of natural resources damages, as well. As is evident, each per day change in the flow rate, when compiled over the 87 day life of the spill, may be worth billions of dollars to BP if in fact it is found guilty of gross negligence with regard to this spill. For instance, for every 10,000 barrels of oil spilled per day at \$4,300 per barrel, over the more than 80 days that oil spilled into the ocean, the fine would be increased by \$3.5 billion. The total size of the spill will also affect the amount of damages BP would have to pay for the spill's effect on natural resources in the Gulf of Mexico.

BP's official website:

(<http://www.bp.com/extendedsectiongenericarticle.do?categoryId=40&contentId=7061813a>) declares that:

"BP is doing everything we can to make this right. We continue to work to stop the flow of oil, clean up the environmental damage, and help make sure that people are compensated for their losses."

A similar message has been conveyed through BP's extensive advertising campaign relating to its Gulf spill response activities. In light of BP's stated commitment to "make this right," the American public deserves to know whether BP plans on accepting the federal government's official flow-rate estimate for liability purposes or whether it plans on litigating this number and low-balling the amount of oil that actually flowed into the gulf. Accordingly it is incumbent upon BP to stipulate that it will accept the FRTG's latest flow rate estimates when the government seeks to collect its fine and assess other damages caused by the Deepwater Horizon Macondo well blowout. We know that this has been the worst environmental disaster in our nation's history and it is high time for BP to legally "own up" to that fact as well.

Thank you very much for your attention to this important matter. If you have any questions or concerns, please have your staff contact Michael Goo or Michal Freedhoff of my staff at 202-225-2836.

Sincerely,



Edward J. Markey  
Chairman  
Subcommittee on Energy and Environment

Mr Lamar McKay  
Page 3 of 3

Cc: Honorable Henry Waxman, Chairman,  
Committee on Energy and Commerce  
Honorable Joe Barton, Ranking Member  
Honorable Fred Upton, Ranking Member  
Dr. Marcia McNutt, United States Geological Survey and Chair, Flow Rate  
Technical Committee

WILMERHALE

August 24, 2010

Douglas F. Curtis

The Honorable Edward J. Markey  
 Chairman  
 Subcommittee on Energy and Environment  
 Committee on Energy and Commerce  
 United States House of Representatives  
 2125 Rayburn House Office Building  
 Washington, D.C. 20515-6115

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**Re: Response to Chairman Markey's Correspondence of August 11, 2010, to Mr. Lamar McKay, President of BP America Inc.**

Dear Chairman Markey:

I am writing on behalf of BP America Inc., ("BPA") in response to your letter dated August 11, 2010 to Lamar McKay, Chairman and President of BPA, concerning the latest estimate on flow rate from the Flow Rate Technical Group ("FRTG").

Without addressing the letter's premises, BP agrees with you that it is important to determine the amount of oil that was discharged from the MC 252 well into the Gulf of Mexico. BP is continuing to evaluate available information, including estimates previously released by the FRTG. The company is also cooperating with the various government agencies looking into this important matter.

If you have any questions, please feel free to contact me directly or have your staff contact Liz Reicherts at (202) 457-6585.

Sincerely,



Douglas F. Curtis

cc: Honorable Henry Waxman, Chairman, Committee on Energy and Commerce  
 Honorable Joe Barton, Ranking Member  
 Honorable Fred Upton, Ranking Member  
 Dr. Marcia McNutt, United States Geological Survey and Chair, Flow Rate Technical Committee

HENRY A. WAXMAN, CALIFORNIA  
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ONE HUNDRED ELEVENTH CONGRESS

## Congress of the United States

### House of Representatives

COMMITTEE ON ENERGY AND COMMERCE

2125 RAYBURN HOUSE OFFICE BUILDING

WASHINGTON, DC 20515-6115

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 PARKER GRIFFITH, ALABAMA  
 ROBERT E. LATTI, OHIO

August 16, 2010

#### Via Electronic Transmittal

Mr. Robert Dudley  
 Managing Director  
 BP  
 501 Westlake Park Boulevard  
 Houston, TX 77079

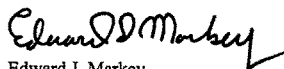
Dear Mr. Dudley:

I am writing to invite you to testify before the Subcommittee on Energy and Environment regarding the BP oil spill and BP's upcoming plans for improving the safety of its operations. I plan on holding this hearing during the week of September 12<sup>th</sup> or September 19<sup>th</sup>—with possible dates for the hearing occurring on September 16<sup>th</sup> and on September 21st-23rd, depending upon your availability.

Please let us know as soon as possible of your availability for this hearing. We will send you another invite letter with additional details upon confirmation of your availability for this hearing.

Thank you very much for your attention to this important matter. If you have any questions or concerns, please have your staff contact Michael Goo or Michal Freedhoff of my staff at 202-225-2836.

Sincerely,



Edward J. Markey  
 Chairman  
 Subcommittee on Energy and Environment

Cc: Honorable Henry Waxman, Chairman,  
Committee on Energy and Commerce  
Honorable Joe Barton, Ranking Member  
Honorable Fred Upton, Ranking Member

bp

Bob Dudley  
CEO Designate

BP p.l.c.  
1 St James's Square  
London  
SW1Y 4PD  
United Kingdom



3 September 2010

The Honorable Edward J. Markey  
Chairman  
Subcommittee on Energy and Environment  
Committee on Energy and Commerce  
2125 Rayburn House Office Building  
Washington, DC 20515-6115

Direct +44 20 7496 4030  
Main +44 20 7496 4000  
Fax +44 20 7496 4573

*Dear Chairman Markey,*

Thank you for your letter of August 16 inquiring about my availability for a Subcommittee on Energy and Environment hearing in September regarding the *Deepwater Horizon* accident and BP's plans for enhancing the safety of its operations. These issues are critically important to BP.

As you know, approximately three weeks ago I was named the BP Group Chief Executive-designate and will be assuming this role on October 1. Given the limited time available, I will need to focus my full attention on ensuring a smooth and effective transition into the Chief Executive role and will therefore unfortunately be unavailable to attend the hearing.

Let me make clear that at BP, safety is our highest priority. That is why the tragic accident on board the *Deepwater Horizon* drilling rig is so devastating to me personally and to the thousands of BP employees who work tirelessly each day to deliver safe, reliable and compliant operations. I want to understand how this accident occurred, and I will thoughtfully consider the findings from the multiple investigations that are looking into this incident.

Yours sincerely,

*Bob Dudley*

Registered in England and Wales: No. 102498  
Registered Office: 1 St James's Square  
London SW1Y 4PD

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August 17, 2010

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PARKER GRIFITH, ALABAMA

ROBERT E. LATTI, OHIO

Mr. Lamar McKay  
President and CEO,  
BP America, Inc.  
501 Westlake Park Boulevard  
Houston, Texas, 70779

Dear Mr. McKay:

Now that BP is nearing the final stages to permanently kill the Macondo well, which discharged an estimated 4.9 million barrels of oil and an additional amount of methane into the Gulf of Mexico, focus is shifting to understanding the impact and pursuing recovery of the region from this disaster. Independent scientific research that is available to the public is critical for this effort.

On May 21<sup>st</sup>, I wrote to you encouraging you to establish an independent scientific research fund. On May 24<sup>th</sup>, you announced your commitment of up to \$500 million to “an open research program studying the impact of the Deepwater Horizon incident, and its associated response, on the marine and shoreline environment of the Gulf of Mexico.” On June 15<sup>th</sup>, you announced that a distinguished group of scientists would serve as the advisory board to the Gulf of Mexico Research Initiative (GRI) and would oversee an “an independent peer-review process” to make awards from the \$500 million to institutions responding to a Request for Proposals (RFP) that was to be published in the “near future.”

At the same time you announced, fast-track awards to research institutions in the Gulf region, including \$10 million to the Florida Institute of Oceanography, \$10 million to the Northern Gulf Institute, and \$5 million to Louisiana State University as part of a GRI grant of \$10 million over 10 years. In your July 14<sup>th</sup> response to my original May 21<sup>st</sup> letter, you indicated that on July 8<sup>th</sup> 2010, BP committed an additional \$5 million in fast-

Mr. McKay  
Page 2 of 3

track funding to the Alabama Marine Environmental Sciences Consortium. You also indicated in your recent letter that BP is “consulting with governors and state and local environmental and health authorities to design the Initiative to take into consideration the environmental and public health of the Gulf Region.”

I am concerned that almost two months after the announcement of the GRI advisory board and the proposed RFP, that it has not yet emerged. It is critical to involve the scientific expertise of the Gulf region, but I am concerned that regional politics might hinder achieving the best possible independent scientific research effort to understand and mitigate this disaster. Accordingly, I ask that you answer the following questions:

1. On June 15, 2010, BP announced the creation of an independent Advisory Council for the Gulf Research Initiative (GRI) that would oversee the peer review process for proposals submitted in response to a Request for Proposals. How were members selected? How will their independence from BP be ensured? How will conflict-of-interest between the Advisory Council members and institutions applying for grants be prevented?
2. Once the Advisory Council has reached a decision on awards, how will institutions ensure that they receive the money from BP over the course of the award?
3. BP has stated that it will issue a Request for Proposals (RFP) for institutions wishing to develop proposals for the GRI fund. Who developed the RFP BP or the Advisory Council? Has it been finalized? When will it be released? Will the RFP proposals be made public? Will the Advisory Council’s deliberations ultimately be made public? BP’s original May 24 announcement did not discuss public health research. Will the RFP be expanded to cover this issue?
4. As condition of the awards, both for the fast-track money and RFP proposals, what conditions are required of the institutions? Will there be a requirement to ensure that the data and results developed from these grants are made public? Will progress reports for any multi-year grants awarded be required?
5. Recent media accounts have suggested that BP is hiring scientists to help with their legal defense. Will these scientists be eligible for GRI funds? If so, how will their GRI-funded research be kept separate from the legal work for BP? Will their contract with BP for legal work hinder the release of their GRI-funded research?
6. BP consultation with governors and state and local environmental and health authorities was first announced after the June 16<sup>th</sup> meeting of senior BP officials at the White House. What transpired during this meeting leading to this consultation process which appears to have slowed progress on the release of the RFP and awards from the GRI?



Mr. McKay  
Page 3 of 3

Thank you very much for your attention to this important matter. If you have any questions or concerns, please have your staff contact Dr. Ana Unruh Cohen or Dr. Avenel Joseph of my staff at 202-225-2836.

Sincerely,

A handwritten signature in black ink, reading "Edward J. Markey". The signature is fluid and cursive, with a long, sweeping horizontal line extending to the right.

Edward J. Markey  
Chairman  
Subcommittee on Energy and Environment

Cc: Honorable Henry Waxman, Chairman,  
Committee on Energy and Commerce  
Honorable Joe Barton, Ranking Member  
Honorable Fred Upton, Ranking Member

WILMERHALE

September 17, 2010

**Kenneth R. Meade**

BY ELECTRONIC DELIVERY

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+1 202 663 6363(f)

kenneth.meade@wilmerhale.com

Honorable Edward J. Markey  
Subcommittee on Energy and Environment  
Committee on Energy and Commerce  
United States House of Representatives  
2125 Rayburn House Office Building  
Washington, D.C. 20515-6115

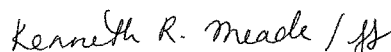
**Re: Response to Chairman Markey's Correspondence, Dated August 17, 2010, to Mr. Lamar McKay, President and CEO of BP America, Inc.**

Dear Chairman Markey:

I am writing on behalf of BP America, Inc. ("BPA") in response to your August 17, 2010 letter to Mr. Lamar McKay requesting further information on the Gulf of Mexico Research Initiative ("GRI"). As part of BPA's commitment to provide responsive information in a timely manner, BPA is providing the following responses to your questions. The GRI is currently under development, and therefore it would be premature to provide detailed responses to certain questions.

If you have any questions, please feel free to contact me directly or Liz Reicherts at (202) 457-6585.

Sincerely,



Kenneth R. Meade

cc: Honorable Henry Waxman, Chairman, Committee on Energy and Commerce  
Honorable Joe Barton, Ranking Member, Committee on Energy and Commerce  
Honorable Fred Upton, Ranking Member, Subcommittee on Energy and Environment

**RESPONSE TO CHAIRMAN MARKEY'S CORRESPONDENCE, DATED AUGUST 17, 2010, TO MR.  
LAMAR MCKAY, PRESIDENT AND CEO OF BP AMERICA, INC.**

**SEPTEMBER 17, 2010 ANSWER SET**

**1. On June 15, 2010, BP announced the creation of an independent Advisory Council for the Gulf [of Mexico] Research Initiative (GRI) that would oversee the peer review process for proposals submitted in response to a Request for Proposals. How were members selected? How will their independence from BP be ensured? How will conflict-of-interest between the Advisory Council members and institutions applying for grants be prevented?**

The members of the Advisory Council announced on June 15, 2010 were selected because of their deep understanding of the relevant technical content and for their experience with research management of a program the magnitude of the GRI. An additional criterion was avoidance of potential conflict of interest, and, therefore, scientists likely to be interested in participating in proposals for GRI funding were not included.

The Advisory Council governance is independent of BP. To ensure the independence of the Council, BP will transfer funds needed for the activities of the Advisory Council to an independent entity. The independent entity will handle all contract and financial transactions with the Advisory Council.

Although the GRI is still under development, BP is committed to ensuring that Advisory Council members adhere to the principles of the National Science Foundation's standards for conflicts of interest.

**2. Once the Advisory Council has reached a decision on awards, how will institutions ensure that they receive the money from BP over the course of the award?**

BP will transfer research funds to an independent third party responsible for GRI administration. The independent administration facility will handle all contract and financial transactions with the institutions selected for GRI funding. The institutions will communicate directly with the third-party administrator on all management and financial issues.

**3. BP has stated that it will issue a Request for Proposals (RFP) for institutions wishing to develop proposals for the GRI fund. Who developed the RFP, BP or the Advisory Council? Has it been finalized? When will it be released? Will the RFP proposals be made public? Will the Advisory Council's deliberations ultimately be made public? BP's original May 24 announcement did not discuss public health research. Will the RFP be expanded to cover this issue?**

The Request for Proposals (RFP) is currently under development. On June 16, 2010, the White House asked BP to work with Gulf State representatives to address concerns voiced by those representatives. BP and the Advisory Council had already jointly developed an RFP prior

to this request (BP's June 15, 2010 press release referred to it), but that RFP was set aside to enable BP to consult with Gulf State governors and state and local environmental and health authorities. BP expects to modify the previously-drafted RFP to reflect input from those discussions, and it will be released as soon as it is available.

Once released, the RFP will be available on BP's website and on other pertinent sites as appropriate. The RFP will describe the proposal evaluation criteria. Regarding the confidentiality of applicants' proposals, the GRI program will adhere to the principles of the National Science Foundation, which include treating submitted proposals as confidential to protect the intellectual property of the authors. The Advisory Council's decisions concerning the proposals selected for funding will be publicly available, including the titles, principle investigators, institutions and descriptions of the proposals that are selected for funding.

The public health impact of the oil spill is and will continue to be one of the primary research themes to be covered by the GRI. On September 7, 2010, BP announced that it will provide \$10 million to the National Institutes of Health (NIH) under the GRI to support public health research. The funding will allow NIH to build on efforts by the Centers for Disease Control and Prevention and the Unified Command. The funds are intended to support the immediate needs of researchers, including Gulf Coast academic institutions and local and state agencies, in understanding potential acute and long-term health impacts of exposures to oil, dispersed oil and dispersants. Decisions regarding the distribution of the \$10 million will be made by NIH with input from Gulf state academic institutions and state and local officials to ensure effective coordination with ongoing projects.

**4. As condition of the awards, both for the fast-track money and RFP proposals, what conditions are required of the institutions? Will there be a requirement to ensure that the data and results developed from these grants are made public? Will progress reports for any multi-year grants awarded be required?**

Funding for the fast-track grants is conditioned on four key terms intended to ensure the integrity and independence of the research. First, the funds must be spent on the immediate research needs for monitoring and characterizing the Gulf of Mexico ecosystem in the context of the oil release, with the majority of the funds committed by the end of 2010. Second, prior to commencement, project proposals must be peer-reviewed and approved by appropriate experts. Third, the resulting data, measurements and findings must be made publicly available as quickly as practicable. Finally, reports and papers must be peer-reviewed by independent experts. There is no requirement that BP pre-approve the scientists' publications.

Since the inception of the GRI, one of the program's core features has been that the data and findings collected pursuant to GRI funds will be shared openly and publicly. Scientists and university professors who receive research grants from the GRI are expected to publish their research and make it available to all who share an interest in these topics. The fast-track grants also included a provision that the resulting data, measurement information and findings must be made fully and openly available as quickly as practicable in accordance with the standard practice applicable to the particular research field of the grantee.

As the RFP process is still being designed, it would be premature to provide details regarding conditions and progress reports for multi-year grants.

**5. Recent media accounts have suggested that BP is hiring scientists to help with their legal defense. Will these scientists be eligible for GRI funds? If so, how will their GRI-funded research be kept separate from the legal work for BP? Will their contract with BP for legal work hinder the release of their GRI-funded research?**

BP, like many companies, and federal and state agencies, has relationships with external scientists that cover a range of activities. These activities fall into three broad areas: the funding of independent scientific research, such as the GRI; litigation experts; and a variety of consulting and contractual relationships. BP's scientific activity in response to the *Deepwater Horizon* incident covers the full spectrum of these relationships. All these scientists will be eligible for GRI funds. The only ineligible scientists are the current members of the Advisory Council.

All findings and data collected pursuant to the GRI will be publicly available. Accordingly, the information may be used in a variety of projects.

Where an expert is hired to assist BP's legal counsel in evaluating legal claims ("litigation expert"), it is standard practice to ask such a litigation expert to maintain the confidentiality of communications with legal counsel. This practice will not hinder a GRI scientist's ability to release GRI data. To the extent that an individual scientist is retained as an expert to assist BP's legal counsel, if that scientist is also undertaking GRI-funded research, he or she will have to comply with the same conditions as other grant recipients. As noted above, BP is committed to ensuring that any data collected pursuant to the GRI and any findings based on that data are made publicly available.

**6. BP consultation with governors and state and local environmental and health authorities was first announced after the June 16th meeting of senior BP officials at the White House. What transpired during this meeting leading to this consultation process which appears to have slowed progress on the release of the RFP and awards from the GRI?**

BP learned in the June 16, 2010 White House meeting that the Gulf States had contacted the Administration with concerns that the GRI proposal might not have incorporated specific concerns directly applicable to the Gulf of Mexico. BP agreed to undertake a consultation process with the Gulf States to address these concerns. With respect to timing, BP immediately contacted all five Gulf State Governors regarding their designated representatives, set up in-person meetings in all five states, and held a series of follow-up meetings and discussions to ensure that the appropriate interests were being represented. While this consultation process has resulted in a longer process leading to release of the RFP, BP now believes that it better understands the program interests of the Gulf States. Once these discussions are completed, the RFP will issue, reflecting these program interests.

HENRY A. WAXMAN, CALIFORNIA  
CHAIRMAN

JOE BARTON, TEXAS  
RANKING MEMBER

ONE HUNDRED ELEVENTH CONGRESS  
**Congress of the United States**  
**House of Representatives**  
COMMITTEE ON ENERGY AND COMMERCE  
2125 RAYBURN HOUSE OFFICE BUILDING  
WASHINGTON, DC 20515-6115

Majority (202) 225-2927  
Minority (202) 225-3841

September 28, 2010

The Honorable Bob Graham  
The Honorable William K. Reilly  
Co-Chairs  
Bipartisan National Commission on the  
BP Deepwater Horizon Oil Spill and Offshore Drilling  
One Thomas Circle, N.W. 4<sup>th</sup> Floor  
Washington, D.C. 20005

Dear Chairmen Graham and Reilly:

I write regarding the Commission's investigation into the manner in which BP reported on and planned its response to the flow rates of oil spewing from its Macondo Well. As you both are reported<sup>1</sup> to have pointed out during yesterday's Commission hearing, these estimates were consistently low-balled by BP. The Energy and Environment Subcommittee's investigations into this matter demonstrates that at the same time that BP was providing these low estimates, its internal documents show that they knew all along what the likely flow rate was. As you know, accurate flow-rate estimates – that turned out to bear a striking resemblance to BP's internal estimates – were only publicly released following extensive modeling by the Federal Flow Rate Technical Group. I hope that your work will include an investigation into just what BP knew, when it knew it, and what consequences its failure to be fully forthcoming may have had.


I share your concern that BP's actions may have misled both the public and those charged with responding to the spill. I also note that the true flow rate of the well will have substantial financial implications for the company. Under current law, BP would have to pay a fine of at least \$1,100 and up to \$4,300 per barrel of oil spilled, with the higher figure in the case of gross negligence being found against the company. So for every 10,000 barrels of oil spilled per day at \$4,300 per barrel over the more than 80 days of oil spilled into the ocean, the fine would be more than \$3.5 billion. The total size of the spill will also determine damages BP would have to pay for the spill's effect on natural resources in the Gulf of Mexico.

<sup>1</sup> <http://thehill.com/blogs/e2-wire/677-e2-wire/121105-oil-spill-panel-chiefs-say-low-oil-flow-estimates-were-harmful>

As you may know, the Subcommittee conducted numerous oversight hearings, briefings and other activities related to this matter. During the course of our investigation, we obtained numerous documents and other statements from BP that demonstrate its awareness of the likely flow rate of the well, even at the same time that it was asserting much lower flow rates publicly. I enclose a timeline of the Subcommittee's investigation, which has links to the pertinent documents.

Thank you for your attention to this important matter. My staff stands ready to assist your staff in any way possible.

Sincerely,

  
Edward J. Markey  
Chairman, Subcommittee on Energy  
and Environment

Cc: The Honorable Henry A. Waxman  
Chairman  
House Energy and Commerce Committee

The Honorable Joe Barton  
Ranking Member  
House Energy and Commerce Committee

The Honorable Fred Upton  
Ranking Member  
Subcommittee on Energy and Environment

**Flow rate timeline**

|            |   |
|------------|---|
| April 24   | BP initially <u>asserted</u> that the flow rate from the Macondo well was 1,000 bpd.  |
| April 27   | BP internal document <u>showed</u> an estimated flow rate in the range of 1,063-14,266 bpd  |
| April 28   | Coast Guard and NOAA publically <u>estimate</u> the flow rate to be at least 5000 bpd, which BP initially <u>disagreed</u> with.  |
| May 4      | BP, in a briefing to the House Energy and Environment Subcommittee Members, <u>say</u> that the worst-case flow rate could be 60,000 bpd.   |
| May 24     | BP provided internal <u>documents</u> to Markey confirming the 60,000 bpd estimate.   |
| May 27     | The Federal Flow Rate Technical Group <u>released</u> its first preliminary estimate of flow rate with a low-end of 12,000-19,000 bpd   |
| June 10    | The Federal Flow Rate Technical Group <u>revised</u> its flow rate estimate upwards to 20,000 - 40,000 bpd.   |
| June 15    | The Federal Flow Rate Technical Group and DOE scientists <u>revise</u> the flow rate estimate upwards to 35,000 - 60,000 bpd.   |
| July 6, 11 | BP internal dispersant <u>documents</u> indicate that dispersant application decisions were made using a flow rate assumption of 53,000 bpd.  |
| August 2   | The Federal Flow Rate Technical Group and DOE scientists <u>revise</u> their flow rate estimate upwards to 53,000 bpd (with 10% error) for mid-July and 62,000 bpd at the beginning of the spill. |





National Commission on the  
BP DEEPWATER HORIZON OIL SPILL  
AND OFFSHORE DRILLING

October 8, 2010

**Commissioners**

Bob Graham, Co-Chair  
William K. Reilly, Co-Chair  
Frances Beinecke  
Donald F. Boesch  
Terry D. Garcia  
Cherry A. Murray  
Fran Ulmer

Richard Lazarus  
Executive Director

The Honorable Edward J. Markey  
Chairman, Subcommittee on Energy and Environment  
House Committee on Energy and Commerce  
2125 Rayburn Office Building  
Washington, D.C. 20510

Dear Congressman Markey:

Commission Co-Chairs Senator Bob Graham and William Reilly have asked me to respond on their behalf to your letters of September 28 and October 5.

Thank you for the information you provide in both letters concerning the flow rate estimates. We appreciate in particular having the benefit of the Subcommittee's timeline of events, as well as Admiral Allen's responses to your written questions of July 30. This information will be extremely helpful to the Commissioners during their deliberations, which commence next week.

Last week, the Commission released four Draft Staff Working Papers, one of which discusses the flow rate estimates, as well as the fate of the oil. We provided those working papers to your staff, and hope that they will add to the record you are developing on these issues.

Once again, thank you for your letters. Please do not hesitate to have your staff contact me if I can provide any assistance in the future.

Sincerely,

Claudia A. McMurray  
Senior Counsel for Congressional and  
State Relations

**Congress of the United States**  
**Washington, DC 20515**

September 29, 2010

The Honorable Harry Reid  
 Majority Leader  
 United States Senate  
 Washington, D.C. 20510

The Honorable Mitch McConnell  
 Minority Leader  
 United States Senate  
 Washington, D.C. 20510

Dear Majority Leader Reid and Minority Leader McConnell:

We write to ask that you bring our legislation giving subpoena power to the National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling to the Senate floor for a vote this week. The House of Representatives approved H.R. 5481 by a vote of 420-1 in June.

As you know, previous attempts by Senator Shaheen and others to bring the House-passed bill to the Senate floor under unanimous consent were blocked by Republicans.

While the federal government has fully cooperated with the commission and its mandate, BP and other private companies involved in the spill have failed to provide accurate and timely information to investigators regarding a number of critical issues. In fact, Commission co-chairman Bob Graham told reporters yesterday investigators have "encountered resistance to full responses to their questions." If these companies continue to stonewall the investigation, the commission will not be able to report back to the President with all the facts that led to this environmental and economic catastrophe.

We strongly agree with a statement from Commission co-chairman William Reilly, who also said yesterday, "It is unjustifiable for Congress not to give full authority for us to use all of the instruments of the investigative process to resolve this, for the one commission that is independent and has a national mandate."

The Senate must act this week so investigators can compel testimony from reticent companies and enable the commission to complete its report on the causes of the spill by the January deadline. Without this critical tool BP and the other companies involved in the spill may escape being held accountable for their mistakes.

The people of the Gulf of Mexico and the nation deserve an explanation of all the circumstances and decisions that led up to this disaster. Only a comprehensive independent review — with subpoena power — will ensure that the necessary lessons are learned, that practices are changed, and that future disasters are averted.

Please advance the House-passed legislation as quickly as possible to guarantee the Commission has the appropriate tools and resources it needs to get the job done.

Sincerely,



**LOIS CAPPS**  
 Member of Congress



**EDWARD MARKEY**  
 Member of Congress

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 PARKER GRIFITH, ALABAMA  
 ROBERT E. LATTI, OHIO

October 1, 2010

#### Via Electronic Transmittal

Mr. Robert Dudley  
 CEO  
 BP plc  
 1 St. James Square  
 London  
 SW1Y4PD  
 United Kingdom

Dear Mr. Dudley:

Thank you for your letter of September 3, 2010, responding to my written invitation to appear before the Subcommittee on Energy and Environment, dated August 16, 2010. In your response, you indicated that during the month of September, 2010, you would not be able to participate in any hearings regarding the BP Deepwater Horizon accident and BP's plans for enhancing the safety of its operations. According to your letter, "[g]iven the limited time available, I will need to focus my full attention on ensuring a smooth and effective transition into the Chief Executive Role and therefore unfortunately will be unavailable to attend the hearing."

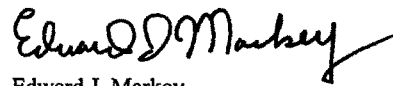
On September 8, 2010, BP released an internal investigation report regarding the Deepwater Horizon accident, authored by Mr. Mark Bly of BP. On September 30, 2010, BP announced a reorganization of its operations and the creation of a new safety division, also to be headed by Mr. Bly.

Now that: 1) you are officially the Chief Executive Officer of BP plc, and 2) the company has released its Deepwater Horizon investigation report, and 3) you have reorganized BP to create a new safety division, I am writing to again request that you appear before the Subcommittee on Energy and Environment to address critical matters of safety in BP's operations. Hopefully, since the Subcommittee first inquired about your

availability to appear for a hearing in early August 2010, you will be able to appear at some time in November or December of this year. Possible dates would include November 16-18, 2010, or November 30-December 2, 2010.

I would appreciate your prompt reply. Thank you very much for your attention to this important matter. If you have any questions or concerns, please have your staff contact Michal Freedhoff of my staff at 202-225-2836.

Sincerely,

A handwritten signature in black ink, reading "Edward J. Markey". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Edward J. Markey  
Chairman  
Subcommittee on Energy and Environment

Cc: Honorable Henry Waxman, Chairman,  
Committee on Energy and Commerce  
Honorable Joe Barton, Ranking Member  
Honorable Fred Upton, Ranking Member

bp

Bob Dudley  
Chief Executive



BP plc  
1 St James's Square  
London  
SW1Y 4PD  
United Kingdom

3 November 2010

The Honorable Henry A. Waxman  
Chairman  
Committee on Energy and Commerce  
2125 Rayburn House Office Building  
Washington, DC 20515-6115

The Honorable Edward J. Markey  
Chairman  
Subcommittee on Energy and Environment  
Committee on Energy and Commerce  
2125 Rayburn House Office Building  
Washington, DC 20515-6115

Direct 020 7496 4030  
Main 020 7496 4000  
Fax 020 7496 4573  
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*Dear Chairman Waxman and Markey,*

Thank you for your letter of October 27, 2010, regarding an appearance before the House Energy & Commerce Committee, Subcommittee on Energy and Environment this fall.

I share your view that the topics identified in your letter are of great importance. That is why I am focused on moving forward significant organizational changes designed to strengthen safety and risk management at BP. This is a major undertaking: it will require careful and sustained attention to look carefully at our current operations, to identify further improvements, and to develop plans to implement these improvements. We are also currently working diligently to determine how best to implement the recommendations from our internal investigation team's report, including examining how we manage contractors. I am pleased to report that a great deal of activity is occurring every day in each of these areas.

I welcome the opportunity to testify about our progress once I have had a chance to further implement more of the major pieces of the ongoing reorganization. As you know, I assumed the role of Group Chief Executive just one month ago. However, I recognize and respect your interest in obtaining information this fall regarding plans being developed in these critical areas. Therefore, to follow up on the briefing my team provided to your staff on October 19, 2010, I would like to work out a mutually convenient date for me (or a member of my safety leadership team) to provide a private briefing to you on our current plans and safety agenda. I look forward to continuing to work cooperatively with you and your staffs on these important issues.

Yours sincerely,  
Bob Bradley

cc: The Honorable Joe Barton  
Ranking Member, Committee on Energy and Commerce  
The Honorable Fred Upton  
Ranking Member, Subcommittee on Energy and Environment

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BRUCE BRALEY, IOWA  
PETER WELCH, VERMONT

Mr. Robert Dudley  
Chief Executive Officer  
BP PLC  
1 St. James's Square  
London SW1Y4PD  
United Kingdom

Dear Mr. Dudley:

Thank you for your letter dated October 22, 2010, responding to the October 1, 2010, request that you appear before the Subcommittee on Energy and Environment to provide testimony at a hearing to be scheduled some time in November when the House is in session. As you know, this recent invitation was only the most recent of several oral and written requests for your testimony beginning in early August of 2010. We regret that, to date, you have been unable to make yourself available to the Committee on Energy and Commerce, and we respectfully request that you reconsider your decision not to testify this fall at a hearing concerning BP's operations in the United States, its plans for improving the safety of its operations, and lessons BP can share from the BP Deepwater Horizon oil spill disaster.

The Subcommittee first inquired informally about your availability to appear before the Subcommittee in early August of 2010, and followed with a written invitation on August 16, 2010, that offered a range of available hearing dates. On September 3, 2010, you responded in writing, and stated that you would be unable to appear prior to becoming Chief Executive Officer of BP on October 1, 2010. As an accommodation, the Subcommittee did not require your testimony during September of 2010, so that you could familiarize yourself with your new responsibilities at BP.

On October 1, 2010, the Subcommittee again wrote to you requesting your testimony at a hearing during the month of November 2010. Three weeks later, you responded, and again declined to appear. You are now the Chief Executive Officer, and should be able to testify about your observations since assuming that role, and your plans going forward to improve operational safety in the United States. The Committee on Energy and Commerce has held ten hearings

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October 27, 2010

JOE BARTON, TEXAS  
RANKING MEMBER

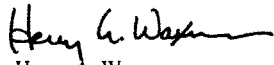
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Mr. Robert Dudley  
October 27, 2010  
Page 2

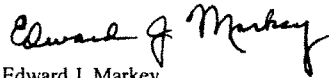
concerning many different issues related to the BP Deepwater Horizon oil spill, and unanimously passed legislation addressing the key problems our investigations identified. It is appropriate that you should appear before the Committee, prior to the end of the 111<sup>th</sup> Congress, to testify about the steps BP is taking to ensure that a disaster like this never occurs again.

We would appreciate your reply no later than one week from today. Thank you very much for your attention to this important matter. If you have any questions or concerns, please have your staff contact Greg Dotson at (202) 225-2927 or Michal Freedhoff of the Subcommittee staff at (202) 225-2836.

Sincerely,



Henry A. Waxman  
Chairman  
Committee on Energy and Commerce



Edward J. Markey  
Chairman  
Subcommittee on Energy and Environment

cc: Honorable Joe Barton  
Ranking Member  
Committee on Energy and Commerce

Honorable Fred Upton  
Ranking Member  
Subcommittee on Energy and Environment



bp

Bob Dudley  
Chief Executive



BP plc  
1 St James's Square  
London  
SW1Y 4PD  
United Kingdom

3 November 2010

The Honorable Henry A. Waxman  
Chairman  
Committee on Energy and Commerce  
2125 Rayburn House Office Building  
Washington, DC 20515-6115

The Honorable Edward J. Markey  
Chairman  
Subcommittee on Energy and Environment  
Committee on Energy and Commerce  
2125 Rayburn House Office Building  
Washington, DC 20515-6115

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*Dear Chairmen Waxman and Markey,*

Thank you for your letter of October 27, 2010, regarding an appearance before the House Energy & Commerce Committee, Subcommittee on Energy and Environment this fall.

I share your view that the topics identified in your letter are of great importance. That is why I am focused on moving forward significant organizational changes designed to strengthen safety and risk management at BP. This is a major undertaking: it will require careful and sustained attention to look carefully at our current operations, to identify further improvements, and to develop plans to implement these improvements. We are also currently working diligently to determine how best to implement the recommendations from our internal investigation team's report, including examining how we manage contractors. I am pleased to report that a great deal of activity is occurring every day in each of these areas.

I welcome the opportunity to testify about our progress once I have had a chance to further implement more of the major pieces of the ongoing reorganization. As you know, I assumed the role of Group Chief Executive just one month ago. However, I recognize and respect your interest in obtaining information this fall regarding plans being developed in these critical areas. Therefore, to follow up on the briefing my team provided to your staff on October 19, 2010, I would like to work out a mutually convenient date for me (or a member of my safety leadership team) to provide a private briefing to you on our current plans and safety agenda. I look forward to continuing to work cooperatively with you and your staffs on these important issues.

Yours sincerely,  
Bob Inley

cc: The Honorable Joe Barton  
Ranking Member, Committee on Energy and Commerce  
The Honorable Fred Upton  
Ranking Member, Subcommittee on Energy and Environment

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STEVE SCALISE, LOUISIANA  
PARKER GRIFFITH, ALABAMA  
ROBERT E. LAFITA, OHIO

November 12, 2010

Mr. Robert Dudley  
Chief Executive Officer  
BP PLC  
1 St. James's Square  
London SW1Y4PD  
United Kingdom

Dear Mr. Dudley:

Thank you for your letter of November 3, 2010, which responded to our request that you appear before the Subcommittee on Energy and Environment to testify about BP's operations in the United States, its plans for improving the safety of its operations, and lessons BP can share from the BP Deepwater Horizon oil spill disaster. In your letter, you state that you are unable to testify at this time and offer instead to meet with us privately to discuss BP's current plans and safety agenda.


We appreciate your offer to meet privately, but we do not believe that it is a substitute for your testimony. BP's safety practices are matters of the utmost importance to the Congress and to the American people. A private meeting would deny Subcommittee members the opportunity to ask questions and keep the American public in the dark about critical safety issues relating to BP's future operations in the Gulf of Mexico and elsewhere.

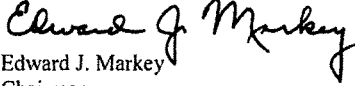
For this reason, we are inviting you to testify before the Subcommittee on November 30, 2010. If this date is inconvenient for you, please let us know an alternative date between November 29 and December 9, 2010 that would be preferable.

Mr. Robert Dudley  
November 12, 2010  
Page 2

Thank you very much for your attention to this important matter. If you have any questions or concerns, please have your staff contact Greg Dotson with the Committee staff, at (202) 225-2927, or Michal Freedhoff with the Subcommittee staff at (202) 225-2836.

Sincerely,

  
Henry A. Waxman  
Chairman

  
Edward J. Markey  
Chairman  
Subcommittee on Energy and Environment

cc: The Honorable Joe Barton  
Ranking Member

The Honorable Fred Upton  
Ranking Member  
Subcommittee on Energy and Environment

**Congress of the United States**

**Washington, DC 20515**

December 8, 2010

**Via Electronic Transmittal**

Mr. Merril A. Miller Jr.  
Chief Executive Officer and President  
National Oilwell Varco  
7909 Parkwood Circle Dr.  
Houston, TX 77036

Dear Mr. Miller:

We understand that National Oilwell Varco (NOV) is withholding information that would greatly assist in understanding the events immediately leading up to the loss of well control that resulted in the Deepwater Horizon explosion and the subsequent oil spill in the Gulf of Mexico. As Congress and the National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling continue to investigate the BP oil spill, it is essential that all information regarding the accident be made available to investigators in order to fully understand the causes of the incident and to craft recommendations that will prevent another disaster like the BP spill.

We understand that you have information that would greatly assist in understanding the events immediately leading up to the loss of well control that resulted in the Deepwater Horizon explosion and the subsequent spill. Specifically, National Oilwell Varco provided proprietary data displays used by the Deepwater Horizon drilling crew to monitor the well. These displays were lost in the explosion and sinking of the rig, but the data used to generate these displays has been retained and provided to the National Commission.

National Oilwell Varco (NOV) holds the key to reading this data in as it was displayed on board the rig. Access to NOV's proprietary Hi-Tech software, combined with conversion of the relevant data into a format that is compatible with such software, should allow simulation of the displays at the time of the event. This re-creation should provide an important window into the accident.

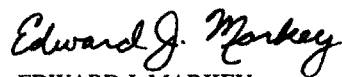
We understand that the National Commission has asked you for this data and that you have not provided it to date. We are writing to request that you provide this data immediately to us and the National Commission.

As you may know, we have sponsored, and the House has passed, legislation to give the National Commission subpoena power so that it can do its job properly. Your refusal to provide extremely relevant information is yet another example of why the National Commission should be given that power---which could in the end save lives and protect our environment from dangerous spills. We will continue to urge that Congress


Mr. Miller  
Page 2 of 2

and the President enact such legislation. If Congress is not able to enact such legislation, it will be up to those who do have subpoena authority, including the Congress, to make sure the true facts of the BP spill are placed into the public domain. We remain steadfast in our determination to ensure that happens.

We would appreciate your reply no later than one week from the time that you receive this letter via electronic transmittal. Thank you very much for your attention to this important matter. If you have any questions or concerns, please have your staff contact Michal Freedhoff on Mr. Markey's staff at 202-225-2836.

  
EDWARD J. MARKEY  
Member of Congress

Sincerely,

  
LOIS CAPPS  
Member of Congress

